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THE UNIVERSITY OF ALBERTA

INQUIRIES INTO "PLAY", A DEFINITIONAL EFFORT

by

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A THESIS

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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled .... Inquiries Into "Play," A Definitional Effort ....

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ABSTRACT

In order to work toward a definition of "play" which would be useful in physical education, a number of major works on the subject of play were selected and analyzed. These works encompassed philosophical studies characterized by the work of classical authors, early systematic investigations, and contemporary experimental work.

As a result of the analysis, seven themes, or common features of play embodied within the literature, were selected to describe play behavior. The seven themes included the notion that play was a balance between two extremes, that it was important, that it was pleasurable, that it was dynamic, that it was related to the unknown, that it resulted in learning, and that it resulted in surprising consequences.

These themes were shown to be dominant characteristics of a kind of behavior which might be called "play". Play was described as resulting from an absence of harmony in the psychological component of an individual. When such a condition dominates the behavior of that individual, he attempts to resolve the disturbance by searching for new information. Play, or a variety of organism-dominated and environment-dominated behavior, is exhibited. New information is received as a consequence of this behavior; learning results; and when the information provides a return to harmony, the experience is regarded as pleasurable.

This conception of play behavior may be broadly defined as a dynamic balancing between two extremes. On the one hand, the individual may try to change himself in order to harmonize with the environmental influences. Alternatively the choice might be made to attempt to effect a change in the environment. It was the vacillation between these two possibilities which was defined as "play". The commitment to respond in any particular manner leads to defined behavior which may be contrasted with playful behavior.

Finally, an attempt was made to show how such a conception of play and definition of "play" may be used in physical education. First of all, it was shown to be useful for interpreting the results of experimental investigations of the various aspects of play behavior. At the same time, however, more exclusive definitions were recognized as desirable for the purpose of conducting specific experiments. The broad definition was also shown to be useful for enhancing one's understanding of the meaning of play, and for guiding play behavior.

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CHAPTER I

INTRODUCTION

Play is a kind of behavior which is well known to almost every person as pleasurable, apparent in both young and old, and universal. Anthropologists have found that children in many cultures are educated through their play. Physical educators have begun to regard play as basic to sports and games. Recreation personnel realize that play is important for the worthy use of leisure time. Psychologists have used play in therapy. Educators have found that play functions in learning. All of these people have recently begun to take a much greater interest in the investigation of play. The formation of TAASP, an interdisciplinary association for the study of play is evidence of this interest.

In the past, play has been neglected by many because it is difficult to understand and control. Children may learn to add, subtract, and recognize sequences, for example, from playing cards. Few parents or teachers would be willing to place school children in a card playing program, however, because they cannot be confident that the children will learn these things. nevertheless, it is apparent that play is a major mode of behavior for children of less systematized societies. This fact plus the obvious appeal which play has for children, makes it a kind of behavior which certainly merits attention.

At this point some may protest, for they cannot take seriously such a claim about the importance of play. Such persons are making the point that words can have many meanings, and play therapy may not be similar to children's play or to sport. Such a charge suggests but does not establish that these uses of the word "play" are unrelated.[1] The arguments presented below will serve to support the position that the meaning of play is similar in each of these cases.

The Problem

The purpose of this thesis was to define "play" in a way which will be useful in physical education. It was argued that many behaviors such as those mentioned above are described in the literature in similar ways. Finding similarities in the description of a variety of behaviors which have been called play probably explains why these behaviors have been identified by the same word. If one assumes that these similarities are the criteria which guide the use of the word "play", then they may be regarded as the defining characteristics of play and they should form the basis of a definition of "play".

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[1] The policy that is adopted in most philosophical writing is that when one discusses a word, it is placed in quotation marks. Thus play is the behavior discussed while "play" is used in discussions of the word.

The first section of this thesis deals with this part of the problem of arriving at a definition of "play". Characteristics of play, which were emphasized by a variety of authors who wrote about play in different times and circumstances, were shown to be similar. Several major similarities were identified as themes in the literature on play.

These themes in the literature were regarded as equivalent to defining characteristics of "play" since they may be regarded as the characteristics which guide the use of the word "play". In order to use them as the foundation of a definition, however, it was necessary to show how these characteristics might be related in a single kind of behavior. This conception of play was then used as the basis of a definition of "play".

The second section of the thesis showed how this conception and definition of "play" can be used. First of all, it was shown to be useful in interpreting scientific investigations of the various aspects of play behavior. Second, it was shown to be useful for enhancing the understanding of the meaning of play. Third, it was shown to be useful in guiding play behavior.

Limitations of the Study

A study such as this one cannot be shown to be objective, valid or reliable by using an appropriate selection of scientific techniques. It is acceptable if the argument is logically sound and if it has explanatory value to those who are knowledgeable in the field. Thus it is both created and judged by using the tools of human reason and intuition. It is therefore subject to all of the related biases and weaknesses which are characteristic of the human condition. Nevertheless, the evidence which is available from experimental and descriptive studies has been considered in the treatment of "play". From this point of view, the study may be regarded as an interpretation of this evidence. In addition, the new hypotheses which result from the study may be tested scientifically. The verification of such hypotheses may support the definition presented herein but even if such support is not forthcoming, the generation of testable hypotheses is in itself a worthwhile endeavor. In this latter case, the study may be viewed as a kind of exploratory investigation which leads to the formulation of testable hypotheses. Thus the study may be regarded as both interpretive and exploratory. In this sense, while the work was done using mainly reason and intuition, it was nevertheless partly derived from and responsible to subsequent scientific investigation.

A further limitation arose from the use of only English material published after the late 19th Century. While this material includes translated works and interpretations of earlier materials, it nonetheless limits the perspective which one may have on the subject of play.

Even this body of English literature is so extensive, however, that one could not cover it in the course of conducting a single study. Many authors have commented upon the problem of covering all the literature (Huizinga, 1950: foreward; Ellis, 1973: xii) and in this case, it seemed that in order to obtain the best perspective on the subject of play, it was appropriate to focus upon the works of those who wrote extensively on the subject.

A related problem arose because in many instances these authors were formulating their positions to explain only a selected aspect of play. Some educators wrote to explain the functions of play in learning, some anthropologists to describe play behaviors in other cultures, some philosophers wrote to show how play was an important aspect of a particular view of life, whereas some biologists wrote to show how playful species are favored in evolution because adaptation is enhanced. In each case the authors explained play in terms of extensive amounts of research which had been done in their respective fields. This presented a problem in this investigation, for the background research which led to the various studies on play encompassed several major disciplines. Huizinga commented upon this problem in 1938.

> In treating of the general problems of culture one is constantly obliged to undertake predatory incursions into provinces not sufficiently explored by the raider himself. To fill in all the gaps in my knowledge beforehand was out of the question for me. I had to write now, or

> not at all. And I wanted to write (Huizinga, 1950: Foreward).

Similarly in this case; it was deemed better to present this material with its inadequacies, than not to present it at all. Inadequacies may be taken care of with the testing of the new hypotheses which result from the study, and the definition may then be replaced or modified. Thus it is perhaps more useful to present the conception and definition of play contained in this thesis for the questions to which they lead, rather than for the answers which they give.

Delimitations of the Study

Scientific investigations are commonly delimited by the researcher, in order to specify clearly to the reader, the exact territory which is to be covered. In this case, one might expect such delimitations to specify the kinds of play to be discussed. For example, one might exclude animal play, or the kind of play which takes place on the stage, or play therapy, or gambling. But this was not a suitable approach for this kind of study, for it was important to have available a maximum number of different ideas about play. This study may be described as an attempt to consider a maximum number of different alternatives and build by identifying joining points. Such an approach was described by Hyland in his discussion of methods for investigating sport, athletics and play.

> ...the point germane to this symposium is that the "mode of inquiry" by which I arrived at these views and continue to question them is certainly no rigorous method. Indeed it is not even so much a "mode of inquiry" as it is a stance itself, a stance which I take to be philosophical after the manner of Socrates. And what is that stance? It is precisely an attempt to be open to all claims to insight, precluding none on a priori grounds, yet to respond to each claim by questioning it as to its meaning and value. Which is to say, is an exhibition of the stance of responsive openness which I find primordially revealed in play (Hyland, 1974: 127-128).

Because such an approach was used here, the delimitations which were adopted for this study were of a different order from those adopted in many more systematic investigations. Since it was impossible to discuss all the material on play, a few representative works were chosen. Also, while many different materials were covered, the bibliography contains only those items which were used in the writing of the thesis. These items were the major sources for the information which was used. In order to create a single conception which accounted for the many aspects of play, resources were chosen to cover as many of the different kinds of play as possible rather than to be comprehensive in dealing with any one particular aspect or kind of play. Such a broad approach is equally as important as an in depth approach in dealing competently with a situation. Just as one may watch the sun for a lifetime and conclude that it revolves around the earth, one may examine a single aspect of play and fail to draw the proper conclusions. Sometimes it is as useful to look at the other aspects of play in order to get a better perspective, as it is to look at the stars in relation to the sun.

Justification of the Study

The subject of play has been mentioned with increasing frequency in physical education research as more and more interest has been taken in the many aspects of participation in physical activities. In the early stages of the development of the field of physical education, discussions of physical activity generally covered a variety of aspects of participation. Ryerson in the May 1852 "Journal of Education for Upper Canada", summarized the situation as follows:

> To physical education great importance has been attached by the best educators in all ages and countries. Plato gave as many as a thousand precepts respecting it. It formed a prominent feature in the best parts of the education of the Greeks and Romans. It has been largely insisted upon by the most distinguished educational writers in Europe, from Charon and Montaigne, down to numerous living authors in France and Germany, England and America. It occupies a conspicuous place in the codes of School regulations in France and Switzerland, and in many places in Germany. The celebrated Pestalozzi and De Fellenberg incorporated it as an essential part of their systems of instruction, and even as necessary to their success; and experienced American writers and physiologists attribute the want of physical development and strength, and even health, in a disproportionally large number of educated Americans, to the absence of proper provisions and encouragements in respect to appropriate physical exercises in the Schools, Academies and Colleges of the United States (Cosentino and Howell, 1970: 74).

As the field developed, the health benefits of physical exercise which Ryerson mentioned became a dominating concern of physical education researchers. As well, physical health became a prime goal of applied physical education and for many it perhaps even began to represent the whole meaning of physical education.

Strong arguments can be presented to support such a position because the relationship between a healthy body and physical activity has been clearly suggested if not established. Many aspects of this relationship can now be predicted and controlled. The investigation of this relationship between health and physical activity was particularly vigorous after World War II and the Canada Fitness Awards for school children are one example of the benefits of this research. But the successful investigation of this aspect of physical education has tended to correspond with the neglect of other very important aspects. When this emphasis on health was carried over into the practical situation, many of the educators recommended specifically prescribed programs of exercise which would ensure the enhancement of the physical condition of each part of the body.

There clearly are differences, however, between prescribed exercises and the spontaneous activities of sports, dance, and games. It is also apparent that participation in these natural forms of activity like sports, dance, and games effectively enhances physical fitness or physical health. Even in the 1911 "Syllabus of Physical Exercises for Schools" which was compiled by the Strathcona Trust, Lewis made a statement to this effect:

> There is also the actual physical effect on the body as a whole, and in this connection it may be remembered that in playing games it is possible to procure a considerable amount of muscular exercise with comparatively little effort and fatigue, this being in a great measure because the exercise is spontaneous and thoroughly enjoyed (Cosentino and Howell, 1970: 107).

Thus, games and sports and dance found their way back into the core portions of the physical education programs. The physical effect, or what has come to be called the "fitness benefit" of these activities, is generally regarded as sufficient to justify their inclusion in school physical education programs. Increasingly, however, researchers in the field have begun to wonder about some of the additional features of games, sports and dance. In particular, it is interesting to question such things as the nature of the spontaneity and enjoyment in games, which according to such writers as Lewis above, make it possible to "procure a considerable amount of muscular exercise with comparatively little effort and fatigue"! This sounds like an easier way to become fit than those to which most people are accustomed. One obvious question is: Why does physical exertion seem to place less strain upon the individual in games, sports, and dance than in prescribed exercises? One may also ask if some similar phenomenon sends the stock car racer to the limits of his ability and into extremely dangerous situations. The mountain climber, the automobile racer and the contestant who eats the most pies may all endure stress for similar reasons. Physical educators need to know what phenomena are operating in such situations if they are going to develop these behaviors in a safe and beneficial manner (let alone "understand" them in the typical academic sense). An investigation of the phenomenon of play, as it has been discussed in selected recent literature, may be a step in this direction.

Several writers have suggested that the examination of play would help one to understand physical education. VanderZwaag, for example, in his philosophical study of sport, suggested that considerable analysis of play, games, and athletics was required before beginning to determine the nature of sport. He also noted that play was probably "the most general and the most basic" of the four concepts of play, games, sport, and athletics (VanderZwaag, 1972:51). Alderman, in his examination of psychological behavior in sport noted that

> ...the question of why children play should be answered, at least partially, in order to shed some light on the more important question of why people participate in sport (Alderman, 1974: 45).

Thus, on the assumption that sport, games and athletics are important aspects of physical education, the examination of play must also be important.

Methods and Procedures

The main problem in this thesis was to work toward a definition of "play" which would be useful in physical education. Since a definition depends upon some knowledge of the behavior, it was necessary to describe the behavior to be defined.

Several major works on the subject of play were selected. Four criteria for the selection of these materials were as follows. First, sources were chosen to ensure that the greatest variety of ideas about play would be incorporated. Second, major works, or those which were cited by writers in several disciplines, were selected. Third, since the resource material on play is extensive, works which summarized segments of the literature were chosen. Fourth, use was made of references which were important for the construction of the argument contained in this thesis.

The purpose of the descriptive analysis of selected major writings on the play phenomena was to ferret out those characteristics which repeatedly occurred in the written work. Those which were identified were labelled as "themes," and were used as the foundation for a further inquiry into and explanation of play. Other points of similarity could have been chosen, but these were regarded as sufficient to show that a meaningful integration of the literature was possible. The themes were selected on the basis of recurrently mentioned aspects of the cause, the description, and the consequences of play behavior.

The various sources were handled by dividing them into three sections. These sections reflected the changes in the literature when it was viewed from an historical perspective. The literature in the first section was characterized by the notions of classical writers and the approach to questions about play could be described as philosophical. The second section of the literature included a number of publications from the latter part of the nineteenth century. These were representative of the early systematic studies of play. The third section included a representative selection of modern studies in which experimental methods have been used.

The descriptive analysis was organized so that each of the sections of the literature could be dealt with relative to the themes. An examination of play words was associated with this analysis. The word "play" can be distinguished from the behavior it signifies and yet, a discussion of the word adds evidence to supplement the discussions of play behavior. No attempt was made to explain why the various authors discussed play as they did. No attempt was made to show that each writer was intending to make the same point or discuss the same aspect of play. The primary thrust of the descriptive analysis was to show that similarities did exist in the literature.

Since several authors had made these points it was regarded as justified to juxtapose these aspects of play and show how they could be used to explain play behavior. Then an attempt was made to define "play" in a useful manner. Finally, an attempt was made to show how the explanation and the definition could be used in physical education. They were shown to be useful for interpreting evidence which results from scientific experiments. They were shown to be useful for elaborating upon the meaning of "play". Finally, they were shown to be useful for guiding play behavior.

CHAPTER II

COMMONLY MENTIONED ATTRIBUTES OF PLAY

Introduction

The function of this chapter is to identify and discuss a variety of commonly cited characteristics or attributes of play which have been presented by major authors. In this discussion an attempt is made to show that characteristics which were identified by some of the earliest writers have been repeatedly cited by more modern researchers. In the later literature it is often the case that the nature of these characteristics has been more clearly specified. 2

A review of the recent English literature on play reveals that three quite distinct approaches to the study of play behavior have been taken. The first style or approach was philosophical and was characterized by the material from classical times. A second manner of dealing with the subject followed upon nineteenth century interest in education and a consequent interest in children and their play. This early development of interest in children corresponded with the beginning of the scientific era and these early systematic investigations of play were given impetus in the mid-nineteenth century by the theory of evolution (Millar, 1968:14). Higher classes of animals were found to play more than lower classes of animals and many writers attempted to explain play in terms of this evidence. The scientific method was developing at this time and by the 1920's it dominated in the academic circles of the English speaking world. This led to what might be called a third method in the treatment of play, a somewhat negative one, in that much of the earlier material was regarded as nonsensical or simply ignored. Instead, hypotheses about selected behaviors were presented and tested. The resulting evidence from studies in this period has generally been interpreted without reference to the writings of the other approaches.

These three segments of the study of play remain almost completely unrelated to one another in contemporary literature. The philosophical material is rarely discussed, although a small number of philosophers continue to examine and write about play. The early systematic studies generally consist of descriptive and interpretive discussions of play behaviors. In contemporary scientific literature, the interpretations are shown to be inadequate. Thus while this literature is acknowledged it is rarely granted much credibility. The scientific material of the modern writers is generally set in the context of other theories in psychology rather than in the context of the earlier theories of play.

Each style of investigation is discussed below in an attempt to identify themes in the literature on play. On the assumption that there is some truth in each of the approaches it might be concluded that the three approaches should be mutually supportive. It would also seem to be the case that there is little advantage for one group to depreciate the contributions of the others who have taken a different approach.

In addition to identifying themes in the discussions of play behavior, it is interesting to identify themes in discussions of play words. Word usage is connected to our perceptions of the related phenomena. Derivations, definitions and exceptional uses of "play" are therefore indicators of characteristics of play which are perceived to be important. The final section of the chapter deals with this aspect of the literature.

Philosophical Discussions of Play

Philosophers rarely write about play in modern times but when they do they stress that while play has been neglected it is nevertheless an important topic. Huizinga regarded play as a fundamental category of life (Huizinga, 1950:28). Rahner postulated the Christian ideal of the serious-serene human being at play (Rahner, 1972:105). Ardley argued that if the literature on play was properly understood, it would necessitate the rewriting of the history of philosophy (Ardley, 1967:227).

The source of this enthusiasm for play among a few philosophers can be traced back to classical literature. While Rahner (1972) has most thoroughly interpreted the early writings, others may be cited who have re-stated or similarly expressed some of the early notions about play. These notions are discussed below as themes in the early literature which can be found in modern philosophical writings.

Play as a balance between two extremes.

Aristotle was one of the first to elaborate on the nature of play, and his basic conception of it has been maintained by later writers. He regarded the virtue of "eutrapelia" or the ability to play, as an ability to strike a balance between the extremes of the "bomolochos" and the "agroikos".

> The one extreme is the "bomolochos", the poor wretch who hung about the alter of sacrifice in the hope of snatching or begging an odd bit of meat; in a broader sense, one who was ready to make jokes at every turn for the sake of cheap gibes. The opposite extreme was the "agroikos", the "boor", whose coarse stiffness was despised by the "aesteios", the highly cultured Athenian citizen (Rahner, 1972:93-94).

In contrast the "eutrapelos" (translated literally as "well turning") was described as follows:

> Those who jest with good taste are called witty or versatile -- that is to say, full of good turns: for such sallies seem to spring from the character, and we judge men's characters like their bodies, by their movements (Rahner, 1967:94).

A true philosopher possessed the virtue of "eutrapelia" or the ability to play. Without this virtue, one became the inflexible agroikos or the chameleon-like bomolochos (Ardley, 1967:230).

While the roots of several contemporary notions about play can be found in the writings of Aristotle and Plato one of the most important is this notion that there are two tendencies in human behavior which must be balanced in play. One of these is the tendency to be rigid and inflexible. Perhaps it is the tendency to subject all incoming information to established patterns -- to resist change. The other is the tendency to be frivolous, to abandon one's own integrity and respond indiscriminately to environmental influences. Such human tendencies are alluded to in more recent literature and Piaget's discussion of play (Piaget, 1951) is particularly interesting in this regard.

Piaget was discussing the development of intelligence when he described two human tendencies which may be compared with the classical writers notion of rigidity found in the agroikos and indiscriminate behavior in the bomolochos. While the classical writers described two different types of people, Piaget discussed two different functions which were part of adaptation (Phillips, 1969:10). The dominance of one of these functions can be attributed to each of the classical types.

One of the functions which Piaget discussed was assimilation which involved the incorporation and therefore the change of things from the environment. The other function was accommodation which involved the change of the organism and through these two functions, operating together, intelligent adaptation was possible.

Perhaps the classical writers would have said that the person who stressed assimilation or changing the environment was the agroikos and the person who stressed accommodation or changing of the self was the bomolochos. They would have agreed that a balance in these tendencies was necessary for intelligent adaptation. It is unlikely, however, that they would have used the word "play" to refer to either extreme, for they identified play with the balanced behavior. In his use of the word "play" to identify the primacy of assimilation over accommodation Piaget is exceptional, and this will become more apparent as the remainder of the literature is reviewed. Piaget seems to describe the related behaviors in a manner which is consistent with other writers, however, so that his exceptional use of the word "play" is simply a difference in definition. This difference will be discussed in the more complete examination of Piaget's work in the later section on the scientific approach to the study of play.

The importance and the pleasure of play.

Out of the two tendencies to be rigid or to be frivolous, the true player was able to strike a balance. This balance was regarded as both important and pleasurable. While the importance of play may be treated as a separate theme from the pleasure of play in current literature, the classical writers treated these two simultaneously. The man who truly played was called the "grave-merry" man (Rahner, 1972:27).

The concurrence of these aspects of play was discussed repeatedly in the classical literature. When man played, he was at his best, he was earnest, and he was humorous. Rahner cited the following examples of this concurrence.

> Plato once called the Phaedrus, one of the most profound of his dialogues, ...a plaything... In much the same spirit Plato refers in the Laws to the extremely serious political activity of the wise old men of Athens as "an intelligent children's game... played by old men", as though it were a kind of indefatigable tinkering with the problem of the greatest possible public good, an activity not unlike that of the artist who is never completely satisfied with his work and who "as one in play" must ever be starting and experimenting anew. That is why the seven wise men in Plutarch's Symposium laugh as they pronounce the truths they have to declare... (Rahner, 1972:33).

Rahner gives contemporary expression to this relationship as follows:

> And so, only one who can fuse these two contradictory elements into a spiritual unity

> is indeed a man who truly plays. If he is only the first of these two things, we must write him down as a frivolous person who has, precisely, played himself out. If he is only the second, then we must account him as one who cannot conquer despair. It is the synthesis of the two things that makes the Homo Ludens, the "grave-merry" man, the man with a gentle sense of humour who laughs despite his tears, and finds in all earthly mirth a sediment of insufficiency (Rahner, 1972:27).

In modern publications these themes are re-stated. Fry, for example, dealt extensively with the relationship between play and humor (Fry, 1963). Pleasure is a particularly obvious aspect of humor for the laughter is observable. Huizinga referred to the pleasurable aspects of animal play in the following argument which was presented to show that play is significant.

> Play is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them their playing. We can safely assert, even, that human civilization has added no essential feature to the general idea of play. Animals play just like men. We have only to watch young dogs to see that all the essentials of human play are present in their merry gambols. They invite one another to play by a certain ceremoniousness of attitude and gesture. They keep to the rule that you shall not bite, or not bite hard, your brother's ear. They pretend to get terribly angry. And -- what is most important -- in all these doings they plainly experience tremendous fun and enjoyment. Such rompings of young dogs are only one of the simpler forms of animal play. There are other much more highly developed forms: regular contests and beautiful performances before an admiring public (Huizinga, 1950:1).

Thus, even among animals, play was regarded as both seemingly significant and pleasurable.

The dynamic nature of play.

Another theme which begins in the early literature is that play is dynamic or somehow associated with movement. Aristotle's comment (Above:18), that one judges men's characters like their bodies by their movements, hints at the idea that play is dynamic. In his discussion of "leisure" which he described as synonymous with "play" in early literature, Pieper perceived that there was a difference between leisure (or play) and idleness. Idleness was like frivolousness or the indiscriminate response. In contrast, he felt that the tendency to "proletarianize" education and the liberal arts and tie them to the process of work, has made these activities too rigid (Pieper, 1952:52).

Such statements as that play is not idleness, or that the characters of playing men may be judged by their movements, emphasize the dynamic aspects of play behavior. Perhaps there is a metaphoric relationship between movement and play. Miller (1970) has discussed such metaphoric aspects of play in his recent publication, and it is possible that play somehow seems like movement. On the other hand, it is clear that particular physical movements are often emphasized in play. Movement is obviously critical for the football player, the one who plays a musical instrument, and the one who acts in the stage play.

Classical writers were cognizant of the physical movement in play. Rahner for example found that they regarded play as a particularly important element in the dance.

> All play has somewhere deep within it an element of the dance; it is a kind of dance round the truth. Sacral play has always taken the form of a dance; for in the rhythm of body and music are conjoined all the possibilities of embodying and expressing in visible form the strivings and aspirations of the mind -- and also, of chastely revealing and protecting them. The Greeks used the dance to give just such concealed and cryptic expression to the ... unspeakable things of the mysteries; for they knew that there are certain insights and intimations which go beyond the powers of speech and may only be expressed in some kind of comely action (Rahner, 1972:66).

Rahner devoted a large section of his book on play to the discussion of dance. Caillois (1958) discussed a variety of vigorous physical activities in his book on play and games. In games involving the pursuit of vertigo the physical activity element was particularly evident, for in these activities the participants sought to disturb their perceptions by various actions such as turning or falling.

It seems to be the case therefore that play has been judged to be dynamic in the sense that it involves observable physical movement. As well, however, this dynamic aspect is important in activities where movement is not observable. Whether this is a metaphoric relationship or whether a related kind of movement is involved, cannot be determined from this part of the literature. Later investigations seem to have provided more evidence regarding this issue.

Play and the unknown.

Another theme which was apparent in this early literature was the relatedness of play and the unknown. This was demonstrated in the above quote where dance and the mysteries were discussed. Mystery and the unknown have been found in the sacred dance, in religious ball games, athletic festivals, and so on. The study of the history of physical education has revealed that in many cultures of both a Christian and Non-Christian nature, a strong relationship may be found between play activities and the unknown or the mysterious or the religious. As recently as 1968, for example, Simri claimed that ball games have fulfilled and continue to fulfill on a world-wide basis a religious and a magical function (1968:2-2).

Huizinga linked ritual with play by showing how play becomes a ritualized activity.

> Archaic society, we would say, plays as the child or animal plays. Such playing contains at the outset all the elements proper to play: order, tension, movement, change, solemnity, rhythm, rapture. Only in a later phase of society is play associated with the idea of something to be expressed in and by it, namely, what we would call "life" or "nature". Then, what was wordless play, itself an independent entity which is senseless and irrational, man's consciousness that he is embedded in a sacred order of things finds its first, highest and holiest expression. Gradually the significance of a sacred act

> permeates the playing. Ritual grafts itself upon it; but the primary thing is and remains play (1950:17).

This is a difficult theme to comprehend because those who are accustomed to thinking of the organized mind as the ultimate human mechanism would find it contradictory to consider that man could somehow relate to mysterious or superhuman or unknown phenomena through play. Nevertheless, the connection between play and the unknown and particularly between play involving physical activity and the unknown, is one which has persisted for some time, and it is one which is of significance in any contemporary analysis.

Play and learning.

Another theme that arises in the early literature is the idea that play results in learning. This theme may be related to the theme that play involves the mysterious and unknown. It is to be expected that, if one plays with the unknown, some learning might result. Earlier writers expressed this relationship with the claim that the true philosopher was one who played. Ardley held that one of Plato's leading themes was that we learn through playing and only through playing. Those who were not capable of playful wonder or eutrapelia could only acquire mere knacks (Ardley, 1967:234). That Huizinga regarded early philosophy as playful is evident from his comment on the sacred books of the east.

> The poet-priest is continually knocking at the doors of the Unknowable, closed to him as to us. All we can say of these venerable texts is that in them we are witnessing the birth of philosophy, not in vain play but in sacred play (Huizinga, 1950:107).

Much of the material in the sacred books was written in the form of questions or riddles. The stakes were high and, as in recent fairy tales, it was common to read of one losing his head for being unable to provide an adequate response (Huizinga, 1950:108-118). It seems to be the case that the ancients used the riddle as proof of their education (Huizinga, 1950:115), and one seems to have emerged from a test of his abilities in much the same manner as a contemporary athletic champion.

> Leaving aside the question of how far the word "problem" itself ...--literally "what is thrown before you" --points to the challenge as the origin of philosophic judgement, we can say with certainty that the philosopher, from the earliest times to the late Sophists and Rhetors, always appeared as a typical champion. He challenged his rivals, he attacked them with vehement criticism and extolled his own opinions as the only true ones with all the boyish cocksureness of archaic man (Huizinga, 1950:115).

Playful qualities were apparent therefore in the behavior of the most knowledgeable of men.

Modern writers who criticize the rigidity of education systems often argue that children should learn through their play. Similar claims are made regarding adult education although the word "play" is less frequently used. The use of such words as freedom, creativity, spontaneity, naturalness and exploration suggests, however, that the writers are arguing for a similarly playful approach. Such writers as Montessori (1967), Neill (1960), Postman and Weingartner (1969), Frye (1971), and Illich (1971) who have argued for more natural alternatives in education frequently mentioned the importance of play or play-like behavior. Montessori, for example, emphasized the spontaneous development of the child (Montessori, 1967:9). Neill described Summerhill as a "school in which play is of the greatest importance" (Neill, 1960:62). Postman noted that there is "considerable evidence that children learn better from other children than they do from adults" (Postman, 1971:25). Illich wrote of the leisure element in teaching

> On the other hand, what characterizes the true master-disciple relationship is its priceless character. Aristotle speaks of it as a "moral type of friendship, which is not on fixed terms: it makes a gift, or does whatever it does, as to a friend." Thomas Aquinas says of this kind of teaching that inevitably it is an act of love and mercy. This kind of teaching is always a luxury for the teacher and a form of leisure (in Greek, "schole") for him and his pupil; an activity meaningful for both, having no ulterior purpose (Illich, 1971:146).

That contemporary critics should find value in such classical thoughts and also in the play of children is evidence that the relationship between play and learning is one which may be developed in modern society.

Play results in surprising consequences.

The notion that the consequences of play are surprising has been expressed in different ways. Ardley noted that Plato seemed to regard play as a way in which we learn without knowing at the time that we learn (Ardley, 1967:237). Huizinga regarded uncertainty as one of the general characteristics of play (Huizinga, 1950:47). Such comments suggest that play leads to unexpected results and that these results may not be planned for in advance. Similar opinions are common, and Slusher expressed such a view by saying that one should play simply for the fun of it (Slusher, 1967:181). Caillois stated that,

> An outcome known in advance, with no possibility of error or surprise, clearly leading to an inescapable result, is incompatible with the nature of play (Caillois, 1961:7).

Similarly, the tradition of amateurism has discouraged players from expecting their performances to result in remuneration.

Summary.

In summary, several notions which were discussed in the early philosophical literature can be found again in recent publications. These notions include the idea that play is a balance between two extremes, that play is important, that play is pleasurable that it is dynamic, that it involves the unknown, that it is related to learning, and that it results in surprising consequences. In the following sections of this chapter, it will be shown that similiar notions were also discussed in the early systematic literature, in the modern scientific literature, and in discussions of the word "play".

Early Systematic Studies of Play

During the latter part of the 19th century in particular, a number of studies dealing with play were published. These were the early systematic studies of play. They were philosophical in the sense that the impact of most of them was made by an argument. Many of these arguments were supported by a great deal of evidence collected from a variety of sources, and in this regard the studies were similar to those done under the influence of modern science. The gathering of evidence was less rigorously systematic than that done in more recent studies, but these early systematic studies contain information about the greatest variety of play behaviors.

The publications from this period are thus a great resource for ideas about play. This resource has often been neglected because the material has been oversimplified in subsequent summaries and reviews where reference is made only to the major themes of each publication. When such work has been treated in this manner, it has been shown to be inadequate and then rejected in favor of more modern notions. However, if one reads the massive amount of evidence presented by such writers as Groos (1898, 1901), it is evident that he and his colleagues had much more to say about play than they expressed in their central themes. In fact, it seems to be the case that those arguments which were most prominent in their writings were arguments which met the needs of their own time. Many ideas which were casually discussed are the ones which are most important today. Ellis noted this, particularly in the writing of Groos.

> Hidden in Groos' writing is a further idea that emerged much later as a theoretical concept of some importance. He cited Souriau who said, "When we indulge in exercise that requires the expenditure of much energy all our functions are quickened, the heart beats more rapidly, respiration is increased in frequency and in depth, and we experience a feeling of general well-being." "We are more alive and glad that we are [1898, pp.289,290]." Groos goes on to add "Besides these external effects of pleasurable feelings they are accompanied internally by a heightened excitation of the sensory and motor centers of the cerebrum, much like that produced by concentrated attention -- a fact which points to the probable explanation of the physiological side of pleasure [1898, p. 289]." This is an almost uncanny precursor of present-day thinking concerning arousal and attention and its mediation by the reticulate arousal system in the brain (Ellis,1973:31).

Many modern notions about play can be traced back to suggestions made in the literature of this time. In addition, some of the themes found in the early philosophical material are seen to recur. These early systematic ideas pertaining to play can thus be compared with earlier philosophical ones, and with modern ideas.

The early systematic studies were produced within a short span of time and, as a consequence, the aspects of play which are emphasized in most of them are similar. Of the several themes which were prominent in the philosophical writings, it seems to be the case that the importance of play is the most prominent in this later literature. Next to this theme, the relationship between play and learning (i.e. the development of the organism), is also given frequent consideration.

The importance of play

It is interesting to consider, first of all, some of the influences which underlay arguments which were put forward at this time. The late 19th century was characterized by a heightened interest in the education of children and, since play was a significant feature of a child's daily regimen, it became salient for scholars examining the educative process of the child. The observation had been made that play was a kind of behavior most apparent in organisms high on the then recently popularized scale of evolution. These factors undoubtedly influenced researchers to become interested in the phenomenon of play. They seemed to have been most interested in learning what purposes play served. If these purposes could be understood, then maximum advantage could be taken of play situations in order to better educate children. As well, if the purpose of an additional difference between organisms on the scale of evolution could be identified (i.e. the difference between play of different species), the patterns of evolution could be more fully understood. Other differences had been shown to favor selection for survival but it was a problem to perceive what consequences play might have which would enhance survival. Several arguments can be interpreted as attempts to explain play behavior in terms of the purposes which it served. Some of these were clearly influenced by evolutionary theory. The earliest example of this influence ~~was~~ the surplus energy argument. It was based on the assumption that play was a kind of behavior which was necessary or inherent in the development of the species.

Herbert Spencer (1855), having been somewhat influenced by the expression of a similar notion in the writings of Schiller (1800), presented the surplus energy explanation of play. Play was regarded as the behavior which resulted when the organism had no pressing needs, and the excess energy was then expended in play. The more highly evolved animals were found to be capable of caring for themselves in less time, and they therefore had more energy available for play.

This argument has been pronounced inadequate for a variety of reasons. It seems to be the case, for example, that tired children will play and even incur a physiological debt. Beach (1945: 527-528) argued that the notion of surplus energy was dependent upon the observer's interpretation of the seriousness or non-playfulness of the activity.

Spencer's argument was useful, however, for it elaborated upon the importance of play. The argument was based on the assumption that play was a natural kind of behavior, or a behavior which filled a basic need. Emphasis was placed on the physiological basis of play. For example, Spencer elaborated upon the relationships between play and the need for food, rest and other requirements for survival. This was an important contribution and, although a great deal of doubt has been cast upon his explanation of this relationship, attention was drawn by his theory toward the possibility of a physiological basis for play behavior. At the very least, it seems to be important to account for his observations that young animals and children do display a great deal of energy in their play. As well, the relationships between such conditions as hunger or fatigue and play are undoubtedly worth investigating. On the one hand, play may seem to dominate behavior, for children and adults will continue to play even when they are hungry. But at other times it seems to be the case that hunger or some other need is of prime importance, and play must wait until this other need is satisfied.

Spencer brought such possibilities to the attention of later writers. His writing served to encourage further examination of the physiological basis of play, and to stimulate discussions of the relationships between evolution and play.

Spencer's writing was followed by Darwin's theory of evolution (1859) and the study of animals and children was given further emphasis. Then in 1898 and 1901, Groos published two extensive examinations of the play of animals and man. Groos added further to the importance of play, by showing that in play, the young practiced activities which would be useful in later life. Later writers have suggested that play cannot be explained in this way, and examples of adult play have been presented to show that such an argument is weak (Millar, 1968:20). Ellis, for example, stated that:

> Groos made a basic teleological error in assuming that because play existed, it existed in order to prepare the adult. Adults who have played appropriately may be more successful in meeting the selective pressures of the environment, but to claim that play exists as preparation reverses the process and is unacceptable (Ellis, 1973: 41-42).

In this case as well, however, it is important to account for the observation that the young do imitate the mature members of their species and that this imitation does seem to help them in later life. It is also apparent that Groos was aware of the subtleties and difficulties of providing an explanation for why play existed. He chose to use the word "instinct" because he wanted to identify play as an unacquired tendency. His work has been criticized because he used this word "instinct" which later investigators have regarded as useless. As Groos noted, however,

> We lack a comprehensive and yet specific term for those unacquired tendencies which are rooted in our psycho-physical organism as such (Groos, 1901:2).

It is frequently the case that words which are used to refer to unexplained phenomena are the subject of much controversy. Many contemporary writers have argued that such words should be abandoned because they cause so much confusion. Beach, for example, suggested that the concept would disappear, and be replaced by "scientifically valid and useful explanations" (Beach, 1966:16). Ellis suggested that

> ...the facile naming of an instinct for each class of observed behavior is to do no more than to say, "Because there is play, there must be a cause which we will call an Instinct " (Ellis, 1973:46).

Similarly, "play" has been regarded as a useless concept for science (Schlosberg, 1948:319). In chapter two, this negative approach to the use of such words is discussed. It is shown that the abandonment of such terms is not practical because the everyday questions which are asked using these words become difficult to answer. As well, it may happen as it did in the case of play that the subsequent investigation of the subject is simply neglected or retarded.

In any case, Groos made the argument for play much stronger. By using an incredible variety of examples, he showed that play was of utmost importance in the development of mature animals and humans. He demonstrated this by pointing to the consequences of the behaviors, but he was also clearly aware of the difficulties involved in discussing the antecedent conditions. His use of the word "instinct", and his suggestion that there is an unacquired tendency to play, implied that some part of the psychophysical structure of animals consistently functions to produce play behaviors. He also demonstrated that this tendency was effective in and essential to the survival of each species.

The argument for recapitulation as an explanation of play was an attempt to account for the cause of play behavior in a more specific way than to simply regard it as an unacquired tendency. The notion that in play the development of the individual (ontogeny) repeats that of the species (phylogeny) was first presented by Gulick (1898:803), but it is generally attributed to Hall (1904). The human foetus had been described as passing through a series of stages which were similar to the sequence of development which was presented in Darwinian evolutionary theory. As well as passing through all of these stages, the child was said to repeat in sequence, the behaviors of early man (Gulick, 1898:803; Hall, 1904:201-206). This part of the argument has been granted little credibility in recent years since numerous exceptions have been found in technological societies. For example, the child who plays with airplanes and rockets cannot be repeating the behaviors of early man. Nevertheless, the relationship between the gills of fishes and the traces of them in the foetus, as well as the relationship between a fish in water and a child playing in water, could have some significance for future discussions of play. The ease with which the very young child learns to swim, even before he or she can walk, is a curiosity which may have some bearing on this idea. Also, the awareness of the interdependence of all living organisms has begun to foster such considerations.

In summary, it is apparent that these studies elaborated upon the ubiquity and hence the importance of play. They showed that play was important in the sense that it was a kind of behavior which was rooted in the psychophysical makeup of the organism. It was found in animals and was increasingly apparent in higher organisms. These observations supported the assumption that it was caused by some basic phenomenon or need. The observation that play served to enhance the development of the young showed that it was not simply a vestigial behavior. Even though it may have reflected the development of the species, it seemed to continue to be functional.[7] The functional aspects of play which were most apparent to these investigators were those which were related to the development of the organism Learning thus became one of the most important consequences of play.

Play and Learning

Just as evolutionary theory had encouraged the investigation of the importance of play, so it also encouraged the investigation of the relationships between the development of organisms and play. Attention had been drawn toward developmental patterns in animals in general, in particular species and in individuals.

Spencer, for example, who postulated that play was the exercise of surplus energy (Spencer, 1896:629), had shown that play was most pronounced among higher organisms where intelligent activity is also most common. Millar's account of his explanation of the nature of this activity is particularly interesting:

> His detailed explanation rests on speculations about the physiology of fatigue in nerve-centers. These, according to him, disintegrate by being used, and need time to be restored. A nerve center which has been at rest for any considerable period of time will become physically unstable. It will then be over-ready to respond to any kind of stimulation, and issue in the kind of action appropriate to that particular center. This accounts for the imitative element in play. When no opportunity for serious fighting has occurred for some time, the animal engages in simulated fights - or plays chess if he is a man. In addition, competition based on egoistic feelings, will, if unemployed, issue in play. Spencer's ingenious physiological speculations are out of date. Nor does his theory cover all the facts. The office worker or business executive does not necessarily use manual skills in his free hours. A boxing champion may be a leisure-time student of Shakespeare, but this is less likely than that the mathematician plays chess which involves similar skills in play to those in work (Millar, 1968:16).

Although Millar suggests that Spencer's notions are outdated, Ellis has shown that, on the contrary, it is currently common to discuss this notion that the resting or the deprivation of a certain response leads to an increased tendency to respond:

> The concept of increased excitability as a result of deprivation is a basic one in motivational psychology. The deprivation of opportunity to respond lowers the threshold at which a behavior is elicited by relevant stimuli. After deprivation, less intense stimulation is necessary to elicit a response, or,

> as a corollary, the original stimuli elicit stronger, longer, or faster responding (Ellis, 1973:30).

Thus, while people seem to choose to play in ways related to their regular activity, there is evidence to support the argument that if a response is rested it is more easily elicited than one which has been practiced. This apparent contradiction will be discussed further in the section dealing with the interpretation of scientific evidence. At this point is is sufficient to note that Spencer did offer an explanation of this aspect of play which is of importance today.

It was the work of Groos which was perhaps the most convincing in showing that the young did learn through play. Groos drew attention to the many different areas in which the young as well as the mature adult could learn through play. These areas were classified into two groups:

> The first important distinction made is that between the impulse by which the individual wins supremacy over his own psycho-physical organism without regard to other individuals prominent in his own environment, and such other impulses as are directly concerned with his relationships to others. To the first group belong all the manifold impulses which issue in human activity, those controlling his sensory and motor apparatus as well as the higher mental dispositions which impel him to corresponding acts. To the second group we assign the fighting and sexual impulses, imitation, and the social dispositions closely connected with these. Each of these manifests its own peculiar play activity. Unfortunately, an adequate terminology here, too, is wanting (Groos, 1898:4).

Groos referred to the impulses of the first order as "playful experimentation" (Groos, 1898:7). Here, all the physical and mental capacities of the individual were practiced. His second or "socionomic" category included fighting, love, imitation and social plays. Thus, many different kinds of play began to be discussed. Groos' classification system separated the exercising of each of the different human functions. Such an approach was useful for demonstrating that play was a widespread and important activity.

A somewhat different effect was created by the recapitulation argument which Hall presented to show that a sequence of behaviors was apparent in play. The recapitulation argument emphasized the relationship between play and human development. The notion that a sequence of behaviors might be exhibited in play was introduced with this argument. This sequence was related to the evolution of the species and, while it was regarded as somewhat vestigial in this argument, it is a notion which continues to be explored.

In review, it may be said, that the early systematic investigations placed emphasis upon the relationship between play and learning. Evolutionary theory had been influential in this regard, since it suggested that human intelligence was a late development in a long sequence of adaptations. As a result, attention was drawn to developmental patterns in play and to the functions of play which might help to account for its increasing presence in higher organisms. As well, it was noted that many different kinds of play could be identified.

The Pleasure of Play

Prominent in many of the early systematic investigations of play was the assumption that play is pleasurable (Groos, 1898:15; McDougall, 1923:171). This became an increasingly popular characteristic, and several writers even defined play as activity in which one engages simply for the pleasure which it affords (Sapora and Mitchell, 1961:114). Recognition of this element of pleasure enabled them to explain why repetition was common -- the sensory-motor activities of infants, for example, were repeated because of the pleasure derived from them. This aspect of play must have been apparent to the early Christians. As Rahner noted, they did not adopt the early view of play as a virtue due to their desire to be less pleasure-seeking (Rahner, 1967:95). Early systematic authors continued to stress this aspect of play as the following discussions will show, and a few have attempted to explain the source of the pleasure.

One such argument was that play was important for achieving a state of relaxation. Writers such as Lazarus and Patrick have been cited (Ellis, 1973:33-34) regarding their argument that through play one may change activity and thereby rest or restore those capacities which are fatigued. This argument drew attention to the play of adults and also the distinction between "play" and "work". If play is regarded as a restorative which is set apart from work, the work--play distinction is emphasized. This distinction has been discussed frequently and, while many writers regarded play as a kind of behavior which is desirable in work situations, others noted that generally is is not a productive kind of behavior and therefore should be distinguished from work (Tilgher, 1930). The former position is frequently taken by writers familiar with the early philosophical literature (e.g., Pieper, 1952). Philosophers have argued that play is an ideal kind of behavior and this leads to considerations of it as a suitable behavior for many work situations. Comparisons of play and work have led to the conclusion that in play the task is less clearly defined. The consequences of play behavior seem to be less predictable and in many work situations, behavior must be highly predictable in order to ensure results. For these reasons it is often deemed necessary to separate play from work.

Thus, the notion that play is related to pleasure was treated quite extensively in this literature and, as a result of these discussions, the relationship between play and work was given consideration.

Other Themes in the Early Systematic Literature

Other themes were not treated extensively in this literature although they were supported. Considering the interests of the writers and the short time during which these materials were published, this is not a surprising state of affairs. Regarding the remaining early philosophical themes, it is apparent that while they were not emphasized, they were nonetheless supported. In the writing of Groos for example, the dynamic nature of play is found in his major category of the playful use of the motor apparatus (Groos, 1898:74). Regarding the two extremes which must be balanced in play, it is apparent that he considered dominance by the player (assimilation), as well as dominance by the environment (accommodation), as both being playful. All forms of imitation, competition, and even destruction were discussed, but he also recognized that playful experimentation is important for intelligent adaptation. Quoting Rousseau, he proceeded at one point to examine the value of experimentation: "...to the higher mental life, where by its help, man is rescued from remaining 'un parfait imbécile' (Groos, 1898:121). His frequent use of the word experimentation implies that the unknown was an important element of his conception of play. In discussing the element of surprise, he drew attention to the case of tickling where surprise is particularly important for we cannot tickle ourselves (Groos, 1898:163). Hide and seek, dice and experimentation with comic behavior are other instances where this element was regarded as important. Thus, Groos supported each of the themes even though he did not place major emphasis on all.

Summary

The most important points which might be considered relative to the early systematic studies may be summarized as follows: Increased interest in children and the impact of the theory of evolution were significant forces in determining the emphasis of these investigations. As a consequence, attention was focussed upon the importance of play and the relationship between play and learning. In the first case it was argued that there is an unacquired tendency to play and this tendency has continued to be functional. In the second case, it was suggested that many kinds of play could be identified and that the nature of play reflected the level of development of the organism.

Discussions of pleasurable aspects of play led to the examination of the issue of play versus work. Particularly in the case of these themes, the writers began to specify more clearly the phenomena which were involved in play. Play was not just significant, for example, but an unlearned response. In addition to being related to learning, play was regarded as being a means by which to specify the level of development of the organism. Such clarification was carried even further by the more systematic investigation of these relationships by the modern scientific investigators. Unlike the early systematic writers, however, the scientific writers emphasized only some of the themes which the philosophical writers had introduced.

The Modern Scientific Investigations

Although contributions to the systematic study of play in the 20th century have been made in many disciplines, the most extensive investigations of the basic components of play behavior were made in psychology. Researchers in other areas who have chosen to discuss or to conduct systematic investigations, have tended to write within the context of psychology. Such physical educators as Ellis (1973) and Alderman (1974), for example, draw heavily from the research done in psychology. A review of some of the major developments in psychology would, therefore, be useful so as to put this material in perspective.

Psychology in the early 20th century changed rapidly and, although there was a great deal of overlap in the developments which took place, the early decades are sometimes referred to as the age of schools (Wertheimer, 1969:93-103). Later periods, in America at least, were characterized by claims of triumph from those who worked to make psychology an objective science and cries of protest from others oriented toward the more traditional view of science. It was this desire to be exclusively and objectively scientific which led psychologists to the neglect of much of the earlier material on play. In order to examine the scientific approach to the study of play, it is therefore useful to look at this trend toward objectivity and the import it had upon the study of play.

The different schools of psychology which were most evident in the early part of the century (Wertheimer, 1969: 99) were not primarily concerned with play, but some of them made claims which were later influential in the study of play (Millar, 1968:23). Freud's psychoanalytic techniques for example, were applied to children, and play was found to be useful in place of the verbal free association used with adults.

In addition to the school of psychoanalysis, Wertheimer described four other schools which were active in the early 20th cnetury. Two of these, structuralism and the Gestalt school, did not have a great impact in America. Structuralism was largely an introspective approach and the Gestalt approach involved phenomenology (Wertheimer, 1969:95). Introspection and phenomenology have been weak forces in the English speaking world, while functionalism and behaviorism (the other two schools) thrived in America. Functionalism which developed under Dewey, Cattell, and Thorndike among others, involved an emphasis on the mind. This emphasis carried over into applied psychology and it also had the effect of placing a strong emphasis upon learning in later American psychology (Wertheimer, 1969:109). Functionalism ceased to be a separate school, but behaviorism, which grew out of functionalism, continued to be powerful. Behaviorism was as Wertheimer put it, "explicitly antimentalistic" (Wertheimer, 1969:94). It thus tended to oppose structuralism and the Gestalt school because of the mentalism involved in introspection and phenomenology. Behaviorism also tended to be opposed to psychoanalytic theory because hypotheses contained in the theory could not be tested. But the psychoanalytic approach has remained influential because it works in situations where there are inadequate alternatives.

By 1940, or after the "behaviorist revolution" as it is sometimes described (Wertheimer, 1969:144; Berlyne, 1973: 4), American psychology had become strongly scientific. This scientific emphasis or antimentalistic phase led to the neglect of much of the earlier literature on play, and also to the exclusion of some of the contemporary but less rigidly systematic material which tended to be written in languages other than English. In order to examine the scientific approach to the study of play, it is necessary therefore to look first of all at the antecedent conditions which led to this approach. As well, the materials must be examined to determine the impact which they made upon the subsequent study of play. This section therefore, is divided into two parts. The first section includes a discussion of the impact which the scientific emphasis had upon the study of play, while the second section includes a discussion of the contributions to the study of play which have been made within the context of psychology.

The Impact of the Scientific Emphasis

The rationale which justified the dominance of the scientific method was clearly presented in the writings of a number of philosophers who were known as logical positivists. The name "logical positivist" in the strict sense refers to those who share the views of a group called the Vienna Circle formed in the 1920's in Vienna (Ayer, 1959:3). The ambition of the group was to develop Logical Positivism as an international movement (Ayer, 1959:5) and it did, in fact, spread throughout much of the world during the 1930's (Achinstein and Barker, 1959:v). The Vienna Circle eventually disintegrated and there is no longer a unified movement or school, but the tradition has been continued, especially in England, Scandinavia, and the United States (Ayer, 1959:7).

> It was a revolutionary force in philosophy, for it stigmatized metaphysical, theological and ethical pronouncements as devoid of cognitive meaning and advocated a radical reconstruction of philosophical thinking which should give pride of place to the methods of physical science and mathematical logic. Logical positivism had a dynamic impact upon all areas of philosophy, but nowhere was its influence stronger than in the philosophy of science, for this the Logical Positivists regarded as their special domain (Achinstein and Barker, 1969:4).

The members of the Vienna Circle thought they had succeeded in finding a way for philosophy to contribute in its own way to the advancement of scientific knowledge. They held that a sentence must either express something which is formally true or false (like propositions of logic or pure mathematics), or express something which is empirically verifiable. Sentences not falling within these categories were regarded as nonsensical, although it was granted that they might have emotive meaning. Discussions about the absolute, about substance, or about the destiny of man were regarded as nonsensical. They were said to be "metaphysical" and were condemned for pretending to be cognitive (Ayer, 1959:10-11).

This original formulation of the positivist's position was inadequate and severely criticized. For one thing, there was the problem of being unable to verify the basic principle (i.e., that a meaningful statement, unless it is formally true of false, must express something which is empirically verifiable) (Ayer, 1959:2). The European attempt to establish criteria for meaningfulness was not abandoned, however, and a similar position was developed in America.

> ...the Viennese positivists realized their kinship of outlook with that of the American pragmatists, especially C.S. Peirce, and with the operationalist approach of P.W. Bridgeman. The pragmatists declared a proposition meaningless if there was no difference that made a difference between asserting it and denying it. The difference that Peirce referred to was a difference with respect to observable consequences. Bridgeman considered a concept to be genuinely meaningful only if it could be defined by specifiable, observational, mensurational, or experimental procedures (Feigl, 1969:5).

In 1959, Ayer noted that at that time the metaphysician tended to be treated not as a criminal, but as a patient; "there may be good reasons why he says the strange things that he does" (Ayer, 1959:8). He also described the extent of the influence of the positivist tradition at that time:

> If positivism be taken in its widest sense, the sense in which it embraces all shades of analytical, linguistic or radically empirical philosophy, it is dominant in England, and in Scand navia, and commands considerable allegiance in Holland and Belgium, in Australia and in the United States. Elsewhere, it makes hardly any showing at all. Theoretically, it is not in all respects at odds with Marxism; the two at least have certain enemies in common: But it cannot flourish under Communist regimes, since Lenin's Materialism and Empiro-Criticism, an attack on Mach and his followers which appeared in 1905, declares it to be a form of bourgeois idealism. In other countries again, one finds philosophers subscribing to

> neo-Thomism, or to neo-Kantianism or to neo-Hegelianism or to Existentialism or whatever form of German metaphysics may be in fashion (Ayer, 1959:9).

It is not surprising in the light of these considerations, that, in the English language, research on "play" has generally been limited to systematic investigations of the conditions which determine play. Questions such as "Is play serious?" are not easily translated into testable hypotheses and, in a climate where the emphasis is placed on "testability", such questions as this tend to be bypassed in favor of others. Bugental described the situation as follows:

> The terms "humanistic" and the "humanities," of course, have a common base, although they are often used today to refer to quite separate concepts. "Humanism" often tends to be a term set in contrast to "theism," and this is, indeed, one of its earlier meanings. In a period when learning was chiefly in the realm of the religious, those who studied the human (as contrasted with the divine achievements of Greece and Rome--language, history, literature, and art--were distinguished by the title "humanists," and their field of study was the "humanities." With the passage of time, and the secularization of philosophy, this contrast lost force, and the "humanities" came to be a way of distinguishing these scholarly disciplines centering around human thought and relations (almost always this meant literature and languages, other conceptions varied as to whether they included the arts, history, philosophy, and--at times--the social studies). But the meaning of the "humanities" was clearly becoming a contrasting one to the "sciences." With the idolatry of science, particularly in this country, the desertion from the humanities became wholesale, and the "social studies" became the "social sciences," while the trappings of scientism were applied to education, the arts, home economics, physical education and almost any other area of learning in sight of the dean's office (Bugental, 1967:287-288).

This is perhaps a rather extreme view, because the scientific endeavors in physical education and in other similar fields have been essential. But the point is made, inadequacies do exist.

Under the scientific emphasis, mentalistic approaches to problems had little credibility and, as a consequence, much of the early literature on play fell into disrepute along with the mentalistic techniques of investigating problems. In addition, there was little that could be done with play from a scientific standpoint. Berlyne commented on this state of affairs in his discussion of hedonic factors in psychology:

> By the end of the 1920's the influence of behaviorism and kindred movements in psychology, as well as of operationism and logical empiricism in the philosophy of science, had deterred psychologists from interesting themselves in pleasure as a kind of conscious experience or an attribute of conscious experience, to be studied through descriptive introspection, and from placing great hopes in it as a means of illuminating behavior (Berlyne, 1973:4).

The literature thus became devoid of attempts to explain play, although some related problems eventually arose which were amenable to scientific examination. Schlosberg's position typified the situation:

> The current emphasis on children's play as a diagnostic and therapeutic tool shows most clearly that this apparently aimless behavior is often highly motivated. Incidentally, it furnishes an excellent example of the advantages of studying the specific behavior in a direct fashion, instead of armchair theorizing. The technique could scarcely have evolved on the basis of general theories of play, or from our knowledge of play in young animals.
>
> One could go on in this fashion for many more pages, showing how the facts subsumed under the term "play"

> can be handled more effectively in specific stimulus-response terms, But enough has been said to indicate that the category "playful activity" is so loose that it is almost useless for modern psychology (Schlosberg, 1947:37).

Schlosberg thus charged that the word "play" was too vague to be of concern to psychology. One may respond by asking whether the word "play" should serve psychology, or vice-versa. If psychology is to be useful to man in has everyday life, then surely the latter position must be adopted. But perhaps Schlosberg was simply pointing out that it is difficult to subject play to scientific experimentation. How can a relationship between play and something else be validated if the phenomenon, which is play, cannot be specified? The problem of the vagueness in the word "play" is critical here, because definitive categories are sometimes regarded as necessary prerequisites for systematic scientific investigation.

It is necessary to take issue with Schlosberg at this point because indefinite or vague categories are often involved in scientific investigations and many relatively definite categories were at one time indefinite. Fodor noted that indefinite categories are used in psychology, when he said that:

> ...it is evident that "behavior" is being put to a technical use when it is employed as a general term for the domain of psychological investigations; nor is it entirely clear how this employment is to be understood or what phenomena the term is intended to cover (Fodor, 1969:8-9).

He attributed this unclarity to the immaturity of the behavioral sciences and certainly such an attribute is to be expected of words in the less mature field of physical education. It is noteworthy as well that confusion does not preclude systematic investigation. The development of the science of genetics, in spite of ignorance of the nature of genes, provides an example to support the acceptance of vagueness in the definition of "play" while nonetheless continuing with systematic investigation.

> ...it was not merely the precise biochemistry of the gene that was unknown to early students of heredity. Even such apparently ontological questions as whether the unit of heredity is an "entity" remained open until Mendel's classic demonstration that recessive characteristics appear unaltered in the offspring of heterozygotes. Since it was this demonstration that showed that a distinction is required between traits and their genetic carriers, it was only in the light of Mendel's work that the geneticist could confidently assert that the primary object of his study is the interaction of trait-bearing entities rather than the interaction of traits (Fodor, 1968:14).

It seems to be the case, then, that it is sometimes necessary to work within the context of vague terms. Since the scientist generally finds that it is necessary to stipulate words and/or their meanings in order to proceed with scientific investigation, he might study responses to novelty, on the assumption that he is investigating an aspect of play. The procedure of stipulation has been used in the study of play, but the results have been difficult to interpret because this relationship between the everyday language word and the stipulated term has not been recognized. Before discussing this problem further, however, it is important to review the conditions for stipulation.

Since there is no natural connection between words and their meanings, there is also no such thing as the right or wrong word, and according to the rule of freedom of stipulation:

> Anybody can use any noise he wants to refer to anything he wants, as long as he makes clear what he is using the noise to refer to (Hospers, 1967:7).

There is one important question which may be asked, however, and that is the question of whether in any particular case, stipulation is practical and useful, or simply confusing. Convenience dictates that the common usage of a word should be employed, but according to Hospers there are exceptions. There may not be a word for whatever is being discussed. It may be less confusing to resist common usage if a distinction is blurred by common misuse. For example, while it is common to confuse "dumb" with "stupid," it is probably better to maintain the distinction between them. Also, a word may be too indefinite, and then it can be replaced, or it can be purified -- "generally by restricting it rather arbitrarily to some specific portion of the hazy area of reference it now has" (Hospers, 1967:10).

It is the latter problem of indefiniteness which is important for the problem of "play," and one of two alternatives -- replacement or purification -- is generally adopted to deal with the problem.

The first alternative involves replacing the indefinite word with another word or group of words, and this is the kind of procedure which Schlosberg suggested should be adopted. Unfortunately, what happened when "play" was replaced by stimulus-response terms as he recommended, was that the initial question of "play" was simply left unanswered. As Millar noted, such positions as Schlosberg's position that "play" is a totally vague, scientifically useless concept, simply "resulted in a dearth of experimental studies of the conditions under which various types of play actually occur" (Millar, 1968:38). Schlosberg held that "play" could be more precisely explained in stimulus-response terms. The question of "play" has subsequently been revived however, and this time the factor of curiosity and the role of attention in learning have been linked to play which is regarded as a response to novelty and change.

This example shows how replacing the word "play" can prove to be unsatisfactory when it involves ignoring the everyday language word. The mistake which was made in this case was that of limiting the questions which could be asked about play to questions which were already formulated in scientific terms, and since other problems could not be expressed in this manner they were ignored. It is apparent that many questions about play (such as whether play is serious or frivolous) could not be asked in scientific terms without further exploration of the nature of the questions. Thus it can be seen that replacing one word with another, and assuming that the original word can be taken care of in this manner, is unsound. It should be possible, however, to stipulate a new word and corresponding meaning, without making the assumption that the stipulation is anything more than a partial or hypothesized answer to the original question.

The second alternative is to purify the word by restricting its meaning, and this is what Piaget did when he used the word "play" to mean the primacy of assimilation over accommodation (Piaget, 1962). Similarly, Ellis regarded "play" as a kind of arousal-seeking behavior (Ellis, 1973).

The cumulative effect of this procedure, is an increasing number of meanings for "play," but the tendency is also to exclude an increasing number of behaviors. As more and more stipulations exclude more and more different behaviors, the result is that there is nothing left which is "play." This approach can result in the same neglect of the initial problem of "play" as the replacement approach, and Sutton-Smith (1972) has expressed concern in this regard:

> If one looks back at the 1952 book by Hartley, Frank and Goldenson on Understanding Children's Play, he will be amazed at the many things that are in there being called play which we would no longer call play. It is already an antique book. Since that time, Piaget and a number of psychologists, like Berlyne, have shown that you can distinguish between play and adaptive intelligence or between play and exploration. There have been a number of studies, though not as many or as specific as we might like, which show that it is desirable to separate out what you want to call play from what you might want to call learning. After that is done and we understand all the forms of a child's learning, whether there is anything left is another question. Berlyne, in fact, feels that there probably will not be (1969). That is dismal news for us romanticists. But my task is

> to see if we can save anything after we have taken out the intelligence, the exploration, and the learning (Sutton-Smith, 1972:14).

Once again, it is apparent that the initial question of "play" is easily neglected, but, as in the replacement kind of stipulation, this stipulation of meaning can be taken as hypothetical, or as only a partial answer.

In the light of the above discussion of the contributions of scientific investigations, it is apparent that, while categories may be stipulated for the purposes of systematic investigation, it is not legitimate to arbitrarily equate the stipulated category with the original word. In the case of "play," a category of "exploration" may be stipulated for the purpose of systematic investigation and it may be possible to validate some aspects of exploration such as which colors are the most attractive to babies. It is a separate problem however, to establish that this behavior belongs to the category "play." This is a problem which involves the relationship between words; in this example, "exploration" and "play" are involved. The clarity, with which such a relationship is described, depends a great deal upon the clarity of the meanings of the words involved. While the stipulated category "exploration" may be quite clear, the category "play" needs to be refined. It is in this area that the traditional mentalistic writings can be employed.

Play in Psychology

As was noted above, it is within the context of psychology that most of the recent scientific work on play has been done. The preceding discussion shows however, that the status of play as a worthy subject for scientific study has been somewhat uncertain. It is important to clarify that this treatment of play was predominant mainly in the English speaking circles where logical positivism thrived in philosophy and behaviorism thrived in psychology. The psychoanalytic work of Freud (1959) and the cognitive approach of Piaget (1951) are two examples of work within psychology which did not fall under the dominance of this scientific approach, and yet which included a number of investigations of play. Occasional observations and speculation are common in the writing of authors in these two areas, while the work of the behaviorists was very systematic.

If the systematic work of the behaviorists is viewed in relation to what might be called the more speculative work of the other writers, an interesting comparison can be drawn in their contrasting treatments of play. First of all, since the scientific writers specified clearly those factors with which they were dealing, they were able to produce reliable and objective evidence which had not previously been considered within the context of play. Neither group worked in complete isolation; so, there is a certain amount of overlap in their contributions, but, in general, the more speculative writers seem to have made statements which deal with similar topics to those discussed by the earlier writers. The speculative writers tended to sustain a broader perspective of the subject, and this was possible because they could consider factors which were not at the time amenable to systematic investigation. It is reasonable to assume that the sustaining of such a broad perspective would be complementary to the in-depth and objective examination of apparently significant aspects of play.

In the following discussion of the scientific contributions to the study of play which have been made within the context of psychology, both the scientific and the more speculative materials are discussed. In the discussion of these materials, an attempt was made to show the recurrence of themes which were important in the early philosophical literature, although the more recent themes were restated or set in a different context. The discussion of the systematic investigations includes a summary of the recent evidence about selected aspects of play.

The writings of the twentieth century researchers who have dealt with play in a somewhat speculative sense may be regarded as similar to the writing of earlier investigators, because the scope of their treatment was not limited to aspects of play which can be handled objectively. The work is different in other respects, however, in that these writers have contributed new information of an empirical nature. Within the psychoanalytic tradition, for example, some work has been done with play as a therapeutic methodology. The study of the development of the intellect by Piaget has also been useful in contributing new information about play.

The development of psychoanalysis is based on the Freudian conception of personality. Wertheimer summarized the basic premises of Freud's thought as follows:

> Freud thought that every act, every thought, is motivated; the fundamental human moving force is the libido, a violently selfish, aggressive sexual drive which constitutes the id, literally the "it," of the personality. Everyone has in himself a creative, sexual force (eros) and destructive, aggressive push toward death (thantos). Early in life the infant discovers that having a drive does not necessarily lead to its satisfaction; one must somehow come to terms with the world, and manipulate it in such a way as to satisfy one's desires. This leads to the growth of the ego, which mediates between the pleasure principle of the id and the reality principle which dominates interactions with the environment. The child's parents attempt the almost impossible task of socializing the id, trying to tame the selfish impulses that constitute the infant's inborn drives; this leads to the development of a superego, a kind of conscience, which makes the person feel guilty any time an id impulse is permitted to express itself (Wertheimer, 1970:132).

Some of Freud's notions can be regarded as similar to the themes of the early philosophical literature. In particular, similarities can be detected between the themes in the early literature and Freud's description of the interactions among the id, ego and the superego. The id was identified as the animal-like system which acted to discharge tension and to turn the organism to a balanced state with the consequent experience of pleasure. The id was governed by the pleasure principle. Through the process of thinking or problem solving, the individual accommodated himself to the environment or asserted mastery over it. The formation of the ego was associated with this process. The superego was thought by Freud to be the superhuman or ideal aspect of the personality, and through associated feelings of pride or guilt it controlled the ego.

Comparing this with the early literature, one could speculate that the tendency to be rigid appeared in this description as the tendency to assert mastery over the environment. The tendency to be indiscriminate reappeared as accommodation. These were two extreme types of behavior which the early philosophers identified. In Freud's system, they were once again related to the process of thinking and learning. The ego, formed as a result of this process, continued to influence future behaviors. This is similar to the notion that past experiences are important in play, and that current play behaviors will affect future behaviors -- notions which were common in the early systematic investigations of play. Some similarities can be detected between the superego, and the superhuman or ideal which the early philosophers identified. In both cases man was shown to be aware of the possibilities which are currently beyond his grasp. Early philosophers felt that play would aid man to deal with these possibilities. Freud also implicated the body, or the physical aspects of the individual, in his discussions. The id was viewed as the component of the human personality which was most closely related to the body and to the animal-like impulse to minimize stresses.

In addition to the above comparisons, it is interesting to examine some of the statements which have been made about play by other writers in the field of psychoanalysis. Erikson dealt comprehensively with play in this regard.

As was mentioned above, the play of children is important for the psychotherapist because if provides a substitute for the free association which is used with adults bring out subconscious feelings. Psychotherapists have been criticized for dealing only with exceptional cases, but just as the exception often proves the rule, so it may be here that dealing with play of atypical children will help to understand the phenomenon. Another reservation which is commonly expressed regarding the psychoanalyst is due to the emphasis which is placed on sexuality. Erikson, for example, placed great emphasis on a theory of infantile sexuality. He showed that among typical children there are sex differences in concepts of space which reflect the child's sense of physical self:

> The most significant sex differences in the use of the play space, then, added up to the following modalities: in the boys, the outstanding variables were height and downfall and strong motion (Indians, animals, motorcars) and its channelization or arrest (policemen); in girls, static interiors, which are open, simply enclosed, and peaceful or intruded upon. Boys adorned high structures; girls, gates (Erikson, 1963:105-106).

Erikson argued that the dominance of,

> ...genital modes over the modalities of spatial organization reflects a profound difference in the sense of space in the two sexes, even as sexual differentiation obviously provides the most decisive difference in the ground plan of the human body

> which, in turn, co-determines biological experience and social roles (Erikson, 1963:106).

While the attribution of many characteristics of children to a sexual background may be overemphasized by Erikson, this does not negate the existence of these characteristics nor the attribution of some of them to sexual experiences. It is therefore useful to look at the treatment of themes which have also been discussed in the earlier literature.

Considering the dynamic nature of play first of all, it is apparent that Erikson treated physical and mental aspects of this behavior as interrelated. His discussion of the different concepts of space among boys and girls as a reflection of their sense of physical self is an example of such relatedness. He also referred to play as "an attempt to synchronize the bodily and the social processes with the self" (Erikson, 1963:211). He thus provided one way of showing how the physical aspects of play, which are obviously dynamic, can be related to play which involves no apparent movement.

This conception of play as a synchronizing or neutralizing force (Erikson, 1963:190) may be regarded as similar to earlier notion of play as a balance between two extremes. Such extremes are also suggested in Erikson's work. Emotion could become so intense that it could defeat playfulness (Erikson, 1963:223), or as he suggested in the case of play-acting,

> ...as the play-actor begins to believe in his impersonation he comes closer to a state of hysteria,

> if not worse; while if he tries, for purposes of gain, to make others believe in his "role" he becomes an imposter (Erikson, 1963:213).

Perhaps the themes which are the most apparent in the psychoanalytic work are those dealing with pleasure and learning. In the many cases discussed by Axline (1964,1969), the pattern of discomfort leading to pleasure when the therapy is successful is most apparent. Axline wrote of accumulated feelings of tension, frustration, insecurity, aggression, fear, bewilderment, and confusion which are "played out" in nondirective play therapy, with consequent emotional relaxation. She spoke of the play therapy room as "good growing ground" (Axline, 1969:16). Similarly, Erikson treated play as pleasurable, and related it to the development of the child. In one instance he discussed Freud's observations of an eighteen month old boy who played "being gone" with a reel on a string. The child's experience of his mother leaving had been too much for him, but, by repeatedly making the reel disappear and pleasurably observing its return, the child was able to learn to handle the situation (Erikson, 1963:216). In these cases it becomes apparent that some play is pleasurable in a particular way, and that this experience of pleasure is preceded by an absence of such pleasure (or even discomfort). This provides information to supplement the early systematic notion that play is pleasurable. The pleasurable aspect of therapeutic cases of play behavior can be expected to result from successful adapting reactions. Thus, in play therapy the child adapts or learns to cope with a difficulty and his success in this regard leads to his feelings of pleasure. Erikson discussed in an interesting way the child's point of view upon first visiting the therapist. In this discussion the child is represented as one who does not know:

> ...all he knows is that certain things and, most of all, certain people make him feel uncomfortable and he wishes that we would do something about these things and people - not about him. Often he feels that something is wrong with his parents, and mostly he is right. But he has no words for this... (Erikson, 1963:224).

Similarly, Axline wrote of the children's responses to therapy as if they were unknowing, and perhaps bewildered or surprised with the results of the sessions.

> During the eighth interview, Herby suddenly asked the therapist, "Do you have to do this? Or do you like to do this?" Then he added, "I wouldn't know how to do this." Ronny asked, "What do you mean? You play. That's all. You just play." And Owen agreed with Ronny. "Why, sure you do," he said. But Herby continued the discussion. "I mean I wouldn't know how to do what she does. I don't even know what she does. She doesn't seem to do anything. Only all of a sudden, I'm free. Inside me, I'm free." (Axline, 1969:19).

Thus, each of the early themes of play can be found again in the psychoanalytic literature -- the balance between extremes, the pleasure, the learning, the dynamic nature and the unknown and its surprises.

Piaget's work on play was based largely upon clinical observations of normal children. Phillips described Piaget's methods as follows:

> Piaget is often criticized because his method of investigation, though somewhat modified in recent years, is still largely clinical. He observes the

> child's surroundings and his behavior, formulates a hypothesis concerning the structure that underlies and includes them both, and then tests that hypothesis by altering the surroundings slightly -- by rearranging the materials, by posing the problem in a different way, or even by overtly suggesting to the subject a response different from the one predicted by the theory (Phillips, 1969:4).

Piaget was able to draw conclusions by the manner in which individual children responded to circumstances which were unique. The technique seems to have been very fruitful in that many new ideas about the cognitive development of children have resulted. While criticism has been levied from more systematic investigators regarding the difficulties in reproducing the studies and the probability of experimenter bias in the results, it is difficult to imagine how much of the work could have been done in a more controlled manner.

Regarding the study of play, it has been pointed out above that Piaget used the word "play" to refer to behavior which is not adapted but is primarily assimilative. Nevertheless, he discussed the related behaviors in ways which are similar to the other writers. Due to this fact, and since his use of the English word "play" was a translation from the French, it seems legitimate to cite his arguments and show how he treated similar themes, thereby adding to our understanding of them.

Piaget, like many writers before him, linked play to the intellectual development of the child. Also, like Freud and the classical philosophers, he emphasized two tendencies which must be balanced in this process. He called the tendency to fit new experiences to the individual "assimilation," while the tendency on the part of the individual to be changed to suit new experiences was termed accommodation. He held that adapted behavior was based upon an equilibrium between these two. This concept is best expressed by the following quotation from his work:

> It is, however, essential to emphasise, in conclusion, that although imitation always depends on intelligence it is in no way identical with it. As we have just reminded our readers, intelligence tends toward permanent equilibrium between assimilation and accommodation. For instance, in order to draw an object towards him by means of a stick, the child must assimilate both stick and object to the schema of prehension and that of movement through contact, and he must also accommodate these schemas to the objects, their length, distance, etc., in accordance with the causal order hand-stick-object. Imitation, on the contrary, is the continuation of accommodation, of which it is the "positive" and to which it therefore subordinates assimilation. For instance, imitation will reproduce the motion made by the stick in reaching the object, the movement of the hand thus being determined by those of the stick and the object (which is by definition accommodation), without the hand actually affecting the object (which would be assimilation). There is, however, a third possibility, that of assimilation per se. Let us assume, for instance that the stick does not reach its objective and that the child consoles himself by hitting something else, or that he suddenly becomes interested in moving the stick for its own sake, or that when he has no stick he takes a piece of paper and applies the schema of the stick to it for fun. In such cases there is a kind of free assimilation, without accommodation to spatial conditions or to the significance of the objects. This is simply play, in which reality is subordinated to assimilation which is distorting, since there is no accommodation. Intelligent adaptation, imitation and play are thus the three possibilities, and they result according as there is stable equilibrium between assimilation and accommodation or primacy of one of these two tendencies over the other (Piaget, 1962:85-86).

Thus, according to Piaget, there is one extreme behavior involving primarily assimilation, or the incorporation of reality into the individual, while adjustment of the individual to reality (accommodation) is the other extreme. Intelligence involves the balance between these two tendencies.

Although Piaget's polarization of assimilation and accommodation is common, it is unusual to find the word "play" used to refer to either extreme. In the English language, one commonly refers to children who are imitating as "playing children" and to a theatrical production as a "play". Thus it does not seem to be the case that play commonly excludes imitation. In addition, the early philosophers regarded play as the ideal behavior which was representative of a balance between the two extreme tendencies. Piaget's unfamiliar use of the word "play" was probably the cause of some criticism from Sutton-Smith, who noted that,

> ...by permitting play only the function of replicating concepts, Piaget derives play of any genuinely constitutive role within thought (Sutton-Smith, 1966:104).

Thus it would seem to result in a less confusing position, if "play" is used to refer to the balance between the extreme behaviors.

An interesting aspect of Piaget's argument is his discussion of the dynamic aspects of these behaviors. Not only did he find that in the early stages of development the sensory motor components were dominant and therefore physical movement was apparent (Piaget, 1952:87), but, as well, he regarded action as important whether there were physical components or not:

> ...also keep in mind Piaget's epistemological position that knowledge is action. The subject is continually acting. His actions are structured, and they are also to some extent autonomous. The investigator must therefore continually change his line of attack if he is to follow those actions and to discern their underlying structure (Phillips, 1969:5).

In his discussion of the child's conception of movement and speech, he showed that the child's actions are essential:

> In this respect the role of experience in the construction of mathematical relationships is, therefore, of a very special nature and one which often escapes the attention of psychologists and epistemologists: experiments of order (number, space) are experiments the subject really makes on himself, i.e. on his own actions and not on the objects, as such, to which his actions simply are applied. That is why these actions once coordinated into coherent 'groupings' may at a given moment dispense with any experiment and give rise to an internal and purely deductive composition, which would be inexplicable if the initial experience had consisted of extracting the knowledge from the objects themselves (Piaget, 1970:36).

Piaget thus claimed that the child begins experiencing life primarily through the senses and physical movement, that the actions of the child are basic to his conceptions and that knowledge is action. It is clear that he viewed the child as dynamic in both a physical movement sense and in the sense in which physical movement is not apparent.

Piaget elaborated upon the notions of the early systematic writers regarding a sequential development of the behaviors associated with play, by describing the distinguishing characteristics of behaviors at various stages in the development of children. In regard to the sequential examination of cognitive development. Piaget has made significant contributions. Basically, the child has been shown to begin with the sensorimotor activities, proceed to operate with concrete forms and then to formalize these operations. While these observations have great significance for many circumstances involving play behavior, the most important point for this argument is that learning is involved.

These notions then, that there are two extreme kinds of behavior, that the balance is most fully adapted, (even though this balanced behavior is not called play in this case), that the behaviors are both physically and non-physically dynamic and that learning is important are apparent in the work of Piaget.

Turning from these more speculative discussions to the systematic ones, it is possible to see that different information is available from the literature. The most relevant literature of the systematic, scientific work on play is difficult to identify, because in many cases the word "play" has been avoided. The reason for this avoidance has arisen from the difficulty in defining the word. Some writers have used the word and only briefly spoken about it, while others have expanded the knowledge of play a great deal, without ever stating that they were dealing with play. In order to remain consistent in the present study, the decision was made to discuss those materials which other writers have found to be important for understanding play. This amounts to a great deal of material; hence, in the following discussion only the major thrusts of the research have been considered.

In many cases, the study of animal behavior has led to the profitable study of similar phenomena in humans. The study of play behaviors among animals has generally been centered upon behaviors which appear to be biologically irrelevant or useless (Millar, 1968:31). As Beach noted however, this criterion for play is difficult to sustain:

> Adoption of the non-utilitarianism criterion in its pure form reflects a certain degree of naivete. As has been noted, young animals often perform, incompletely, various actions which will be executed in their totality during adult life. In the mature animal the behavior in question can be shown to serve an obvious and biologically useful end, such as mating and reproducing, securing food, self-defense, etc. In the young animal the behavior pattern does not terminate in the same result. Accordingly it is sometimes concluded that the reactions of the youngster are without any immediate result or purpose (Beach, 1945:532).

The study of animal behavior has confirmed Beach's view that behaviors called "play" often have unknown significance. While this indicates that it may be an error to regard play as useless, these activities may still be called "play". A different reason for using the word "play" then becomes necessary. A review of the information which has resulted from some of the studies of animal behavior can be helpful in this regard.

As a result of studies of animals, several classes of conditions have been shown to lead to play. In the case of displacement activities, the observed behavior seems to be unrelated to the circumstances at hand, and such behaviors seem to result when the ongoing activity has been checked, or incompatible reactions have been equally aroused. Millar discussed one activity of this type which has been observed in the male stickleback fish:

> The male stickleback fights other males on his home ground, but flees from them outside his territory. At the boundary of his territory, where he has to be equally ready for either of these incompatible responses, a male upon seeing another frequently shows digging movements as if building a nest (Millar, 1968:33).

Other activities seem to occur when some but not all of the conditions for the complete activity are present, as for example when a bird performs nest building movements when in breeding condition without having the appropriate materials with which to actually build the nest. Similarly, satiated cats will appear to play with mice, and young mammals are said to play when they exhibit mating behaviors before they are sexually mature (Millar, 1968:32-35). In each of these cases, the behavior is not routine but somewhat erratic, and the animal seems to be unable to deal with the conditions which are presented. Two factors seem to be involved in these cases -- the environmental influences and the condition of the organism. While the conditions of the organism are sometimes difficult to determine, it seems that change in the environment is important:

> Play is often described as "spontaneous" activity, implying that it is not caused by external factors. If anything, this is probably the reverse of the facts,

> at any rate in animals. If there is any one characteristic in common between the reported play from birds to monkeys, it is that it is preceded by some change in the environment....The other condition, almost balancing the first, reported as essential for ants play-fighting as well as baby monkeys fiddling with twigs is the absence of anything to make them frightened or uncomfortable (Millar, 1968:100).

Also cited as important for play is that work by Pavlov on the orienting reflex (Ellis, 1973:83-84). He identified an unlearned response to novelty and change in animals which has been called the orienting reflex. Basically,it was shown that upon the presentation of an unfamiliar stimulus, the ongoing behaviors were stopped and the animal's attention was oriented toward the new stimulus. Further examination of this response has shown that the repeated presentation of a novel or stimulus can lead to familiarity and the cessation of an alerting reaction or the orienting response (Millar, 1968:39). This might be similar to the effect which repetition has in play therapy. It is also interesting to note that the orienting response involves the interruption of other behaviors. As was noted above (p. 34), discussions of the relationship between unlearned tendencies such as eating and play have raised the issue of whether play is superfluous, or whether it can take precedence over basic tendencies such as eating. The orienting reflex provided evidence to show that play may interrupt these other behaviors.

Secondary reward is another phenomenon which has been related to play. According to Alderman,

> Hull, like other behaviorists, assumed that reward was essential for learning--that learning occurs when drive states are reduced by satisfying the needs that create them. Primary rewards (e.g. food and water) for primary drives (e.g. hunger and thirst) obviously are essential for the individual if he is to learn how to reduce hunger and thirst needs. The same is true for secondary drives. Praise, recognition, status, money, or toys as secondary rewards, are recognized as having an immediate effect on learning as well. It is in the satisfaction of secondary drives, such as the drives for achievement, affiliation, and independence, that the importance of play as a variable in learning has been identified (Alderman, 1974:36).

It is generally assumed that secondary reinforcement operates in many human behaviors and particularly in complex activities like political endeavors, social behaviors or occupational activities. Sports, games and play undoubtedly are similar in many respects, and Huizinga made a strong case for the evidence of complex cultural forms of play as well (Huizinga, 1950). Therefore, the operation of secondary reinforcement in play is to be expected. But is is unlikely that play behavior, in its most simple form, can be explained in this way. The implication of the orienting reflex, the study of the behavior of infants and animals, and the suggestion that play involves a response to unfamiliar stimuli imply that play is essentially a basic form of behavior and not a learned, secondarily reinforced behavior. As was noted above, earlier writers such as Groos have also suggested that play is an unacquired tendency. The aspects of play which can be regarded as learned might be distinguished from the other aspects which are unacquired in much the same way as gourmet dining is distinguished from hunger. It might be noted however, that in both eating and play, such a distinction is probably very difficult and complex. For example, some writers have suggested that play is a consequence of learning to imitate, or of learning to value competence (Alderman, 1974:37-39). The orienting reflex could develop into behaviors which are dominated by such considerations. Where an orienting response might end and feelings of competence might begin, is difficult to ascertain.

Studies of the responses of animals and man to external stimuli have led to several new ideas about play. Studies of preferences have shown that rats prefer novelty or change in mazes, even when there is no other reward. They will select an unfamiliar pathway over a familiar one (Millar, 1968:43). Adult humans likewise prefer incongruous pictures to ordinary or familiar ones, complex to simple drawings, and surprising patterns or those which differ from preceding ones (Millar, 1968:45). Things which are very familiar, as well as changes which are absolute or abrupt, are not noticed. This has led to the conclusion that some notion of relative novelty is important. It has been suggested that the ability to handle information may be particularly important here (Millar, 1968:45). For example, phenomena which are completely unrelated to earlier experiences (like trees moving across a field) may go unnoticed; or if they are noticed, they may have an aversive effect causing the individual to retreat. These conclusions seem to shed some light upon studies of individuals who have been required to attend to repetitive processes.

In cases where persons must monitor repetitive stimuli, decrements in performance have been recorded over time (Ellis, 1973:85). Repetition seems to help an individual become familiar with a new experience, but when his attention to already familiar stimuli is enforced, the individual seems to withdraw his attention. The studies showing that familiar phenomena are not selected for attention would support this conclusion.

Arousal, or increased activity, has been related to the response to novel stimuli by several researchers (Ellis, 1973:89-99). Arousal is generally apparent after the presentation of external stimuli and it "is reduced by exploration and investigation" (Millar, 1968:45). Ellis has suggested that play is primarily arousal-seeking behavior, but since the activities of exploration and investigation reduce arousal this is unlikely to account for many of the simple cases of play. It is possible that in some instances the individual learns to seek arousal. (This problem is dealt with in the fourth chapter where the definition formulated in this thesis is used to interpret contemporary scientific evidence.)

Sensory deprivation studies have also been discussed relative to play. Sensory deprivation is created by removing customary patterns of stimulation, and aversive responses to such conditions have been reported as a result of procedure (Millar, 1968:45). The subjects are put into very unfamiliar circumstances, or what can be described as extremely novel situations. It is not surprising therefore, that aversive consequences are reported. It would also seem to be reasonable to describe the circumstances as unfamiliar when animals are caged and perhaps similar conditions exist in retardation where normal patterns of information processing are interrupted. Repetitious behavior which is observed in these circumstances may be similar to that which is observed in play therapy cases. It may represent the organism's attempts to process the information which cannot be easily related to previous experiences.

In an attempt to interpret some of this evidence, some writers have suggested that play represents an endeavor aimed at reducing conflict (Alderman, 1974:38). Such a view would subsume the various kinds of information which these investigations have produced. The play of animals seems to result from a want of harmony whether the animal is confused, immature, or partially stimulated. The orienting reflex is a response to novelty which by definition cannot be handled appropriately by the organism. In sensory deprivation, and in repetitive tasks, conditions seem to include the very unfamiliar and the very familiar, and both are beyond the range of relative novelty which is most attractive. It is assumed in this view that moderate novelty disturbs the individual to a tolerable extent, thus resulting in playful behaviors.

Regarding the relationship of this evidence to earlier themes, one might assume that since relative novelty is attractive, it is perceived as somewhat pleasant. One of the criteria for determining arousal is an increased activity level; thus the behavior is dynamic. Novelty implies that some aspects of the stimuli are unknown. Learning is probably involved when exploration results in familiarization with novel phenomena. Organisms prefer relative novelty or a balance between conditions which are very familiar, and those which are very unfamiliar and difficult to handle. This is similar to the balance between the extremes of rigidity (control by the individual), and indiscriminate behavior (control by the environmental influences) seen in the earlier writings. Such similarities strongly suggest that the behaviors which these writers have discussed, are one and the same as those discussed by the previous writers.

The Use of the Word "Play"

It has been noted previously that the examination of the uses of various play words can contribute to the explanation of play. Of the many authors who have discussed play, Huizinga is one of the most frequently cited. He examinated play as a cultural phenomenon and showed that there were relationships between play and many aspects of culture, including art, war, law and knowledge. He also made a significant and unique contribution by discussing the derivation and use of "play" words in several languages.

Huizinga found in his examination of "play" words, that remarkedly similar concepts are understood by comparable words in many languages. In addition, a common semantic starting point for these words in many languages, was "rapid movement". Other English words which he used to describe this semantic starting point were "movement or action", "limited mobility or freedom of movement", and "lively rhythmical movement". In contemporary usage he noted that "freedom of movement within limits" is commonly called play, particularly when reference is made to inanimate movement. This was found to be the case in the French, Italian, English, Spanish, German, Dutch, and Japanese languages (Huizinga, 1950:28-45).

It seems reasonable to conclude that the early usage of a variety of words to denote play may have some implications for the way in which these words have been used in more recent times. Perhaps movement, or movement within limits, or rhythmical movement, are, or have been prominent in human perception of the behaviors which are now called "play". Contemporary use of such words as "rhythmical", "movement", and "limits" is surprisingly frequent in physical education where play has some importance. Among physical educators, movement and rhythm are recognized as particularly important. Many have characterized the field of physical education as the study of human movement. Dance, which forms a major part of most physical education programs, is a clearly rhythmical form of movement. Frequent contemporary usage of the word "limits", is less apparent, but words which refer to kinds of limits are very common. Rules, for example, place limits on the kinds of behavior which are acceptable in games and sport. Although Huizinga did not claim that there was any relationship between the derivation of "play" words and his definition of play, it is interesting to note that he placed great emphasis upon limits in his definition:

> ...play is a voluntary activity or occupation executed within certain fixed limits of time and place, according to rules freely accepted but absolutely binding, having its aim in itself and accompanied by a feeling of tension, joy, and the consciousness that it is "different" from "ordinary life" (Huizinga, 1950:28).

As can be seen from the above quotation, Huizinga included the limits of time, place and rules in his definition of "play".

In review, then, an examination of the derivation of "play" words, has indicated that movement, rhythm, and limits may have been important aspects of what was perceived when "play" words were used. These characteristics were found to be similar to those themes which have been discussed in subsequent sections of this chapter. Movement and rhythm suggest dynamic aspects of the behavior, while limits may be compared with the two extreme kinds of behavior between which classical philosophers sought appropriate balance.

CHAPTER III

A CONCEPTION AND A DEFINITION OF PLAY

Introduction

The purpose of this chapter is to show how the themes discussed in chapter two can be used to explain a single behavior. The discussion in chapter two covered three approaches to the study of play--the philosophical, the early systematic and the modern scientific approaches. The ways in which "play" words have been used were also discussed. Several notions about play were repeatedly discussed in these different segments of the literature, and these may be regarded as themes in the literature about play. Using the themes as a basis, a single kind of behavior is described in this chapter and, on the basis of this description, a definition of "play" is suggested.

Themes in the Literature

The identification of several themes in the literature was one of the first steps taken in developing a definition of play behavior which would be useful in physical education. Seven themes which were repeatedly discussed in the literature, are listed below:

Novelty or unfamiliar conditions. The unfamiliar was commonly discussed relative to play behavior. The examination of early philosophical materials and the study of play activities in many cultures has shown that a relationship is commonly perceived to exist between play and unfamiliar phenomena. The unfamiliar phenomena have been described as mysterious, religious, magical and superhuman, but in each case it is apparent that human comprehension of the phenomena is limited. Similarly, contemporary writers have used such words as "novelty" and "exploration" to discuss responses to unfamiliar phenomena.

Scientific investigations have shown that novelty or change, incomplete conditions, and conflicting information lead to behaviors which have been called playful. For example, when a child is presented with a spinning top for the first time, his response may be described as playful; he is exploring an unfamiliar object or responding to novelty. When a little girl plays house and sweeps the floor, however, the situation may seem to be quite familiar but the child is not mature and responsible. In this case, some elements of the complete behavior are missing, namely maturity and responsibility. The child cannot be completely familiar with housekeeping until these elements are included in the behavior. In the case of incomplete behaviors, therefore, unfamiliarity is again present although the conditions are different. Conflicting information may produce playful behavior in circumstances which seem to be both complete and familiar. For example, someone may challenge an adult by saying that he cannot spin a child's top. The statement conflicts with the adult's previous experience and, although he may be able to spin the top and the conditions are complete, playful behaviors ensue. It seems to be the case, that the unfamiliarity in this case rests in the challenge and not the activity itself. These somewhat different sets of conditions thus seem to have the capacity to introduce unfamiliarity and to arouse playful behavior--novelty or change, incomplete conditions, and conflicting information. This evidence points to the suggestion that play results when an individual is inadequate or somehow unable to deal directly with a situation. In addition to these kinds of unfamiliarity which arise from the environment, it is to be expected that such conditions could simply develop from combinations of stored information which are recalled.

Basic Behavior. The notion that play behavior is basic and necessary was found throughout the literature. Philosophers wrote of it as an ideal. Early systematic writers discussed the instinct or unacquired tendency to play. Pavlov described the orienting reflex, an unacquired investigatory response. More recently, investigations have shown that animals and humans prefer to attend to stimuli which induce playful behaviors. The most reasonable explanation seems to be that an individual's inadequacy or inability to deal with a situation tends to create a disturbance or psychological absence of harmony. Then, just as when an individual is hungry, it is necessary to do something to establish greater internal harmony. The hungry eat, while those who perceive an absence of psychological harmony, must attempt to integrate the appropriate information by playing.

A Dynamic Behavior. A third theme in the literature on play is that play is dynamic behavior. It has been associated with movement, dance, abundant energy, rhythm, and an increased activity level or arousal. If it is the case that appropriate information is necessary to provide psychological harmony, then dynamic behavior also becomes necessary. Appropriate information is rarely available immediately; it must be found. Searching is necessary and the chances of finding suitable information are often increased by physical and mental exploration of a variety of situations. Some researchers have noted that an arousal or activity-increasing mechanism, the reticulate activating system, interacts with higher cognitive centers (Ellis, 1973:89-91). Disturbances may activate this system to increase activity rates in both the psychological and physical components of an organism. Thus it may be possible to structurally identify this dynamic characteristic of play.

A balance between rigidity and indiscriminate behavior. Several writers have discussed two tendencies which are common in play. These can be regarded as the tendency to be rigid and change the environment, and the tendency to be indiscriminate and change to suit the environment. A balance between these two tendencies has been regarded as most appropriate and playful. These two tendencies may be dominant characteristics of play behavior, because in unfamiliar circumstances the individual is most frequently required to select between rigidity and indiscriminate behavior. The selection would be most important because some balance between these two extremes is necessary for the survival of the organism. Maintaining established patterns does not allow for the new perceptions, while indiscriminate behaviors do not account for the conditions of the organism. Some balance between these two alternatives has been regarded as preferable and it would seem to foster the successful coexistence of the organism and the environment. Once the circumstances are familiar and the organism has adapted or selected appropriate responses, the behavior is no longer playful. The dynamic search is complete and selections have been made; so, the subsequent behavior can become more predictable and routine.

Pleasurable behavior with unpleasant aspects. Some reference to pleasure is common whether humor, fun and/or relaxation are cited in discussions of play. First of all, it is likely that as one requires appropriate information and then finds such information, the experience of satisfying the need could be described as pleasurable. Eating when hungry is similarly satisfying. A single experience may not be sufficient to completely satisfy the need however, and repetition, which is commonly observed in play, may function to further the satisfaction derived from meeting such a need. A puzzle may be put together several times, for example, before it is so familiar that it is no longer interesting.

While pleasure is generally regarded as a significant aspect of play, it is important to note that several writers have observed that an absence of pleasure, unpleasantness or even distress is also common. This serves to show that play is not constantly pleasurable, but that the experience of pleasure occurs at specific times. As was noted above in the discussion of play as a basic behavior, a relative absence of pleasure would be observed before suitable information is acquired and satisfaction is experienced. Discomfort or distress is caused by "severe" unfamiliarity, while pleasure is experienced as the organism adapts. Scientific research has shown that very unfamiliar perceptions are aversive. Stimulus deprivation is also aversive, as is enforced attention to familiar phenomena perhaps because these conditions are so unfamiliar.

A behavior which results in learning. Learning is regarded as a significant characteristic of play, because unfamiliar circumstances have a great tendency to induce change or adaptation in the organism. Such a change can be regarded as learning.

The notion that relative novelty is important and that organisms do not, therefore, attend to grossly unfamiliar phenomena is important here. Since attention is given to relatively novel phenomena, or phenomena which are similar to those previously experienced, one can assume that when conditions or past experiences among organisms are somewhat similar, attention will be directed toward similar phenomena. Therefore it is to be expected that common patterns of attending to novelty may be found in similar organisms. Thus the play behavior of organisms with common experiences will be similar and amenable to systematic investigation. On the other hand, one would not expect individuals with different experiences to attend to the same aspects of new information.

A behavior which results in surprising consequences. A final characteristic of play which is frequently mentioned, is that the consequences of play behavior are surprising or unexpected. Plato's notion that one learns through play, without knowing at the time that he learns, is one example. In the modern amateur code, writers have similarly emphasized that man plays for reasons other than to achieve the consequences of the behavior. The themes from the literature on play, which have already been discussed, may help to account for these statements.

Organisms play to resolve a conflict or remove a disturbance. They play primarily because of the preceding conditions and not because of the consequences of the activity. Thus, while certain consequences may be predictable and even apparent to the player, playing cannot be directed toward these consequences without a loss in playfulness because attention is withdrawn from the preceding conditions. Behavior which is determined by familiar consequences is planned behavior, not seeking and exploratory behavior. Acts are predetermined, and less surprising. Consequences are expected, and less surprising. While players may earn money or learn or make friends, as a consequence, these are not crucial to the existence of the play behavior. Just as one must eat to satisfy hunger, one must play to satisfy a psychological need. As one is eating, one may enjoy the taste of fine food or develop a vitamin deficiency or become obese, but these are not determinants of the basic nature of eating behavior in most cases. In a society which condones obesity, one must learn to eat in order to become obese, and in a society which condones affluence, one might learn to play in order to earn money. These are important considerations for eating and playing humans and, even though they do not determine the basic character of playing and eating, they may be very significant in shaping the more complex and culturally developed forms of play.

An Integration of the Themes

The above themes from the literature on play suggest a definition of play behavior which may be useful in physical education. These themes provide the basic information for the description of a single behavior which may be called "play". The description of this behavior can be presented most effectively in three segments. The first segment gives consideration to the antecedent conditions which result in playful behavior. The second aspect of the description deals with the nature of the playful activity. The third segment involves the discussion of the consequences of play.

Briefly, it seems to be the case that at certain times an absence of harmony, or a dissonance in the psychological component of the individual, is the dominating force in the behavior of that individual. In attempting to resolve this dissonance by searching for new information, play or a variety of assimilating (organism-dominated) and accommodating (environment-dominated) behaviors are exhibited. New information is received as a result of this behavior and learning results. When the information provides a return to harmony, the experience is regarded as pleasurable. A more comprehensive discussion of these factors is given below.

The Antecedent Conditions

Three themes are important for the discussion of the antecedent conditions. These include the notions that play involves a response to novelty or unfamiliar conditions, and that play is a basic behavior. The pleasure of play is important since it is at this point in the behavior that there is an absence of pleasure relative to the later conditions. In some instances, this has even been described as an unpleasant phase.

On the basis of the preceding discussions of responses to novelty, it is reasonable to state that relatively unfamiliar conditions seem to have the capacity to create a psychological imbalance or a disturbance within an individual organism. It also seems to be the case that this disturbance may be identified as the locus of unpleasant aspects of play which some researchers have recorded. These two themes may thus be related in the sense that novelty creates a psychological disturbance. The disturbance which is created by the unfamiliar conditions results in play which may dominate the behavior of the organism, depending upon the relative importance of other requirements. Play may dominate even when the need for food or sleep is apparent. Thus, it seems to be the case that when disturbing conditions caused by novelty are dominant, play becomes necessary for the health of the organism. It is the means by which the disturbance can be reduced.

Consider, as an example, an infant seated on the floor holding a rattle. An adult enters the room and places a new set of blocks beside the child. The child notices the blocks and play ensues. These conditions are similar to those which commonly precede playful behavior. That the child has been presented with an unfamiliar plaything is readily observable in the situation. It is more difficult to identify an absence of harmony or a psychological dissonance. One can observe crying in cases where the child is unable to stack the blocks easily into a tower, and this suggests that a mild discomfort may be experienced even in cases where the toy is manipulated quite successfully. In such cases however, discomfort is probably not even consciously perceived. Hypothesizing some kind of discomfort, created by unfamiliar information, explains the power of novel or unfamiliar situations to induce playful behavior. Since discomfort is apparently reduced by playing, it is reasonable to assume that this unpleasant condition leads to play. It can be noted that one must consider the possibility that organisms do play in circumstances which are somewhat affected by other contingencies, but in the most simple cases play is probably a simple response to discomfort resulting from novelty.

The notion that play is a basic behavior, or an unacquired tendency, is supported by the common observation of play situations like the example of the child with the unfamiliar blocks. Such examples are common among young children and animals as well. The spontaneity of these responses, plus the importance of novelty, indicate that play is an unacquired tendency. It would be somewhat contradictory to suggest, for example, that an organism could learn to respond to novel situations, for once the learning takes place the situations are by definition familiar, and not novel.

In summary, then, the antecedent conditions for play behavior include an organism which has the basic psychological tendency to be disturbed by unfamiliar perceptions. When novelty is perceived, discomfort ensues and the organism becomes active in order to reduce the discomfort. This activity is commonly called "play".

The Nature of Playful Activity

The themes in the literature which help to elaborate upon the nature of playful activity, include the notion that play involves a balance which lies between two extremes and that play is dynamic. It has already been established that play results when novelty creates a psychological disturbance which is somewhat unpleasant. The organism is activated by this imbalance just like an organism is activated when it is hungry. A hungry child will search for food; a puzzled child (one who has been exposed to novelty) will search for a solution to his puzzlement. Searching behavior is behavior which involves movement, and the movement is often unpredictable. Imagine the pathway of someone looking for a lost button, and by comparison imagine the pathway of someone who decides to buy a button. In the first case, the individual moves in various directions at irregular intervals while in the latter example, the individual travels in a predetermined manner. The first kind of movement is typical of many playful behaviors which result from unfamiliar circumstances.

An explanation may be given for this kind of dynamic behavior. The organism is seeking to reduce the discomfort which was created by unfamiliar perceptions. There is a difficulty, however, because the way in which these unfamiliar things become familiar is not known. How for example did our ancestors go about becoming familiar with lightning? Familiarity was achieved through discoveries, and discoveries are often elusive phenomena. It seems to be the case that the organism must expend a great deal of energy in order to gain familiarity with novel phenomena.

The theme that play involves a balance between assimilation and accommodation may provide some clues as to how an organism can become familiar with novelty. On the one hand, it is reasonable to assume that one could simply remove the discomfort of novelty by changing novel conditions to be the same as familiar conditions. One could simply change the phenomenon which is the object of perception. This is a common kind of action. For example, one may observe that a drawing of a man has no separation between the head and the body, and then change the drawing to match his idea of a man. The adult who insists that human figures should have heads which are somewhat distinct from the remainder of the corresponding anatomy, is ensuring that his perceptions match his previous experiences. In a similar manner, the child who protests when a babysitter comes to look after him is resisting change. He is demanding that the environment be maintained (even though he may not be successful). It may not be appropriate, however, to insist that the environment should suit the individual. Many parents for example, feel that it is desirable for children to learn to relate to other people. The other alternative is for the individual to change to fit the environment. The mother, for example, may leave her child, and then the child must change.

Assimilation (changing of the environment) and accommodation (changing of the self) are obviously necessary behaviors if an organism is going to be able to maintain harmony between itself and its perceptions of the environment. When differences between an organism and its environment are perceived by the organism, these differences may be described as novelty. The impact of these differences may be reduced if the organism changes the environment or if the organism changes itself. Discomfort which is caused by novelty makes some choice necessary. Since it is probably undesirable to assimilate all novel circumstances or to accommodate all cases of novelty, some balance between these two alternatives must be adopted. Achieving this balance does not seem to be an easy or straightforward matter, and the dynamic nature of play is related to this difficulty. The more easily a choice is made, the less playful is the behavior. When a choice is difficult, there may be an unpredictable exploration of several alternatives--an erratic or dynamic pattern of behavior.

In summary, then, play behavior may be described as an unpredictable, dynamic or erratic kind of behavior which results when an individual attempts to reduce the discomfort created by novelty. The choice between assimilating or accommodating the novelty must be a continuous process, for the individual cannot choose one course and neglect the other.

The Consequences of Play

The themes in the literature which help to explain the consequences of play include the theme that play is a pleasurable behavior, the theme that play is behavior which results in learning, and the theme that play is a behavior which results in surprising consequences.

The pleasure which results from play behavior may be set in contrast to the antecedent unpleasant aspects of play. In other words, the experience of pleasure seems to be due to the reduction of the discomfort caused by novelty. An example may help to explain why pleasure seems to be most suitably regarded as a consequence of play. An adult picks up a set of shapes which must be put together in a particular manner. He may be frustrated by the problem, but after some effort is able to put the puzzle together. The adult claps his hands together, tells every one of his success, and generally appears to be happy. A similar behavior may be observed when children succeed with more simple puzzles. Children will often giggle with pleasure when they are able to accomplish such tasks. In both cases, the most dramatic demonstration of pleasure occurs as the consequence of the play. Thus, it seems to be most reasonable to assume that the playful behavior has resulted in some change that brings pleasure. The removal of the discomfort which led to the playful behavior is the most obvious change which could bring about this pleasure.

It can be argued that pleasure is also experienced during the play sequence. Some of this experience of pleasure may be due to partial successes or to the solution of minor problems. For example, putting each additional piece of the puzzle together may give satisfaction to the player.

The second theme which bears upon the consequences of play, is the fact that play has surprising results. During playful behavior the individual is, by definition, dealing with unfamiliar phenomena, and the consequences of play are surprising because one cannot easily plan or predict under such circumstances. Many consequences must therefore be surprising. As was noted above in the discussion of this theme, the playfulness of the behavior is reduced as the player tends to act in terms of predictable consequences.

One would expect that learning should occur "surprisingly" if it is a consequence of playful behavior. It is very difficult for a player to predict how he will act, for searching or exploratory behavior is unpredictable. There is a difference, however, between consequences which are surprising to the player and those which are surprising to the observer. A toddler may be surprised when he topples his pile of blocks, for example, while an adult may predict his surprise after observing the behavior of several other young children.

A Definition of "Play"

On the basis of the preceding description of play derived from themes in the literature, it is now possible to recommend a short definition of "play". In order to do this, it is important to consider the nature of a definition.

Basically, a definition is simply a rule for the use of a word (Hospers, 1967:21). As Hospers suggested, one useful technique is to examine,

> ...which characteristics of a thing we consider to be defining. A defining characteristic of a thing (not only a physical thing but a quality, an activity, a relation, etc.) is a characteristic in the absence of which the word would not be applicable to the thing (Hospers, 1967:23-24).

Thus, proposing a definition is equivalent to suggesting under which conditions the word "play" should be used. On the assumption that the most useful definition of the word "play" is one which reflects the subtleties in the available knowledge about the play behavior which is of concern to physical educators, this definition should be based upon the conclusions of the preceding discussions.

As was stated above, it seems to be the case that at certain times, an absence of harmony or a dissonance in the psychological component of the individual is the dominating force in the behavior of that individual. In attempting to resolve this dissonance by searching for new information, play or a variety of assimilating or accommodating behaviors are exhibited. New information is received as a result of this behavior; learning results; and, when the information provides a return to harmony, the experience is regarded as pleasurable.

Consideration can be given to each of these factors to determine their usefulness as defining characteristics. The consequences of play are not useful because, in some cases of play, these characteristics which have been identified as important are absent. It is possible to play without learning, for example. Also, play is an activity in and of itself, not the result of an activity. The antecedent conditions are similarly limited in usefulness since they do not identify the activity itself. As well, the initial psychological condition of the organism is difficult to determine. Thus, while psychological discomfort may be a necessary condition for play, it is both difficult to identify and a precedent of the activity.

It is apparent, therefore, that there are difficulties associated with the use of the consequences and the antecedent conditions in the definition of "play". In scientific work it is often the case that the cause of some event is used as a defining characteristic. Such an approach may be fruitful in the case of play. Some description of the condition of psychological discomfort could be identified as the cause of play behavior. This is done in chapter four, to show how the conception of play which has been presented can be used in physical education.

For everyday language, however, a different approach may be more justified. Play is an activity or a process, and the characteristics which most suitably define "play" might be aspects of the process itself. The experimenter may concentrate on cause and effect, but the individuals who are playing are often more interested in what is happening at the moment. Emphasis on the causal factors may limit the attention which is given to the play process itself.

Play has been described as a dynamic balancing between two extremes. Both the dynamic aspects of the behavior and the extremes were shown to be dominant in the semantic starting points of play words as discussed by Huizinga above. It was suggested that these characteristics were commonly perceived when play words were used. As well, these qualities are the most apparent in uses of the word to refer to inanimate play (such as play in a wheel or waves upon the beach). Since it seems to be the case that these aspects of play have long been apparent, it is probably most suitable, at least at this point, to maintain this emphasis on the process of play. Thus, it seems most useful to emphasize in the definition of "play" the dynamic balancing between two extremes. While the scientist may wish to focus his attention on the cause of play, the maintenance of such a perspective upon the process would preserve the strongest relationship between the everyday language use of the word and the results of scientific endeavors. Human play may, therefore, be defined as that activity in which man, seeking to reduce his psychological dissonance or disharmony searches for new information to assist in the development of a dynamic balance between the two extremes of behavioral situations that are characterized either by organism- or environment-domination. Playful activity may be distinguished from non-playful activity which is either organism-dominated or environment-dominated. The child who tries to force a square block into a round space and the child who places each block where his teacher instructs him to place it are not playing. In the former case the child's intentions dominate while in the latter case the child's environment dominates. The child who vascillates between the demands of his teacher and his own desires is playing.

CHAPTER IV

USING THE DEFINITION AND CONCEPTION OF "PLAY"

Introduction

The definition of "play" which has been presented in the preceding section, and the argument about the nature of this behavior, can be used in three ways. First of all, they can be used to explain the results of scientific experiments. They can also be used to elaborate upon the meaning of play activities. Finally, they can be used to guide play behavior. These three uses of the definition and explanation of play are discussed below.

Interpreting Scientific Evidence

In this section on interpreting scientific evidence, the conception of play which forms the basis of the definition presented in chapter three is used. The definition itself is of limited use in this instance because the experimental material does not deal with the process of play to any great extent. Rather, the cause of the behavior is of primary concern. Therefore, for the purpose of this discussion the broad definition of play, which focuses upon the process of play, must be put aside. In its place is substituted a definition which is more limited in scope. This more limited definition focuses upon the cause of play behavior, the aspect of the behavior which has been subjected to experimental investigation. As was noted above, it is common for the definitions used in science to be based upon causal factors. In this case, the use of such a definition facilitates the discussion of the experimental evidence. At the same time, however, the definition proposed in the last chapter may be held in perspective so that the play process itself is not lost from view. It might be noted as well that the use of a causal definition of play for purposes of experimentation, does not contradict the use of another definition for everyday language purposes. Both types of definition stem from the same conception of play. The broad process-oriented definition is more suitable for everyday language. It focuses upon the activity itself, and therefore it implicates many of the subtle meanings of play. Recent researchers have focused upon the cause of these behaviors. One cannot discuss these aspects of play successfully unless a causal definition of play is adopted. The relationship between these two definitions is presented in Figure 1.

In this discussion play is causally defined as behavior resulting from psychological discomfort created by a need for information which is not readily available. Words such as difficulty, dissonance, and disturbance are used to refer to this condition. Further specification of the antecedent conditions would be presumptuous at this point. As well, such specification is unnecessary

FIGURE 1

A COMPARISON BETWEEN THE PROCESS-ORIENTED DEFINITION OF "PLAY" AND THE CAUSAL DEFINITION

THEMES	DESCRIPTION OF PLAY BEHAVIOR	DEFINITIONS OF PLAY
The Antecedent Conditions 1. a response to novelty 2. a basic behavior	At certain times an absence of harmony or a dissonance in the psychological component of the individual is the dominating force in the behavior of that individual.	The Causal Definition Play is behavior resulting from psychological discomfort created by a need for information which is not readily available.
The Play Process 3. a balance 4. a behavior between two extremes 5. a dynamic behavior	In attempting to resolve this dissonance by searching for new information, play or a variety of assimilating or accommodating behaviors are exhibited.	The Process-oriented Definition Play is that activity in which man, seeking to reduce his psychological dissonance or disharmony searches for new information to assist in the development of a dynamic balance between the two extremes of behavioral situations that are characterized either by organism or environment-domination.
The Consequences 6. a pleasurable behavior 7. a behavior resulting in learning 8. a behavior resulting in surprising consequences	New information is received as a result of this behavior; learning results; and when the information provides a return to harmony, the experience is regarded as pleasurable.	

for the purposes of the ensuing argument. The argument is intended to show one direction in which further research may be extended. At this time it is not possible to specify more clearly how this should be done. Other investigators have discussed similar conditions and, in particular, psychologists have made incursions into the area of dissonance. While some of these materials may prove useful for guiding the directions of later work, such investigations are not discussed relative to this material because the treatment could only be cursory. (The use of the word "dissonance" in this thesis implies that there may be some similarities between this use of the concept and the use of dissonance in the work of Festinger (1962), Berlyne (1973), and Fiske and Maddi (1961) but it is beyond the scope of this thesis to elaborate further on this relationship.)

The purpose of this section is to show that by using the arguments about play which were based upon the explorations of the literature, one can explain the scientific evidence about play which is available from experiments. Writing about themes found in the literature is one manner of transmitting ideas. A currently more credible approach, although a more difficult one, is to anchor these ideas in scientific evidence. For the purposes of this thesis, it is also desirable to examine discussions of play which have arisen within the context of physical education. For this purpose a comprehensive discussion of play in physical education, which has been based upon evidence resulting from experimental investigations was selected. This was the work of Ellis (1973b).

Ellis brings together for the physical educator a great deal of evidence on novelty, stimulus-seeking, and arousal. These are the aspects of play which have been sufficiently well identified to permit experimental investigation. The scientific evidence underlying the statements in his argument provides an acceptable and comprehensible base for a discussion. His interpretation of this evidence gives structure to the following argument because it provides a position which can be contrasted with the one presented in the preceding chapters. Part of Ellis' argument is that play is arousal-seeking behavior which is motivated by a physiologically-based need for arousal. This is the part of the argument which is of interest here.

This chapter begins with a review of Ellis' position. Then an argument is presented to show the shortcomings of his arousal-seeking model. The alternative which has been presented in this thesis is then re-stated in terms which correspond to those used by Ellis. The two interpretations of play behavior are then compared in relation to the evidence which has been made available from scientific investigations.

A review of Ellis' position.

Ellis based his statements upon the results and interpretations of such experimental studies as those of sensory deprivation, human vigilance and the manipulatory-exploratory behavior of primates. These studies have provided the following evidence which he cited as having particular interest.

> ...the decrement in performance in human machine operators or monitors under conditions in which there are few stimulus events to attend to; the aversive and disorganized effects of prolonged perceptual deprivation; the incentive value of manipulation and exploration in higher mammals, the habituation to repeated presentations of stimuli (Ellis, 1973:80).

Ellis claimed, that a powerful explanation for play has grown from these post World War II streams of research (Ellis, 1973:8). The conclusion which he drew regarding the motive for play is that the higher animals have a mechanism which motivates them to maintain a level of arousal which is within an optimal range. To maintain this optimal level of arousal, increased stimulation is generally required, and according to him, part of the consequent stimulus-seeking behavior is what is known as play (Ellis, 1973:80,111). He argued that this conclusion is found to agree with most of the scientific literature reviewed in his book. As he noted,

> The view that some behavior is a form of stimulation seeking or arousal seeking has a long academic history. That history has a major link to Hebb at McGill, and Berlyne, now at Toronto, in Canada, and originally to Pavlov and the orienting reflex (Ellis, 1973b:5).

The sequence which Ellis outlined could be described in three phases as follows: 1) common state in which the arousal level is too low, 2) stimulus seeking activity, and 3) location of appropriate stimulus, resulting in a subsequent adequate arousal level. Such a sequence immediately strikes one as plausible, but after further consideration at least two major problems appear. These difficulties arise from the use of the arousal-seeking idea as a causal explanation for the behaviors discussed.

Shortcomings in the arousal-seeking model.

Two demonstrations of the difficulty in the arousal-seeking model can be made. The first is found in the description of the behavior; the second appears as a contradiction in the arousal-seeking model itself.

The first problem in the arousal-seeking model is most evident when it is noted that, in many of the studies to which Ellis refers, a different sequence of events is described. Most of the studies refer to a stimulus followed by an increased activity level, while Ellis seems to be suggesting that the arousing stimulus follows, or is the result of searching activity. Pavlov, for example, described the orienting reflex as behavior which followed novel stimulus presentation. As Ellis noted, the Russian physiologist found in his experiments with dogs that something novel would interfere with whatever the animal was doing. Pavlov called this the investigatory or "What is it?" reflex and it is now commonly referred to as the orienting reflex (Ellis, 1973:84). Further studies of the reaction have shown that an individual becomes aroused or alerted by novelty, and that sensitivity to receiving specific sensory stimuli increases. This has the effect of maximizing the information which the organism can receive and inhibiting ongoing processes. Depending upon the significance of the novel event and its consequences, these orienting responses may subside or continue (Miller, 1968: 39). The orienting responses are probably the least complex of the kinds of behavior which have been discussed within the context of play, and Pavlov regarded this kind of behavior as basic to exploration, research and other creative pursuits (Miller, 1968:390). In addition the ongoing activities are interrupted. If the animal were seeking to be stimulated by novelty, as Ellis argues, then it would not likely be engaged in other activities such as eating as was the case with Pavlov's dogs. Instead it would be seeking the stimulation.

Miller stated in discussing play in mammals other than primates that mildly exciting conditions are conducive to play. In other words the excitement leads to playful activity. She also noted that Inhelder (1955) has suggested that play functions to decrease the excitement (Miller, 1968:72). Such evidence strongly suggests that play would occur *following* an arousing stimulus rather than *preceding* an arousing stimulus. This apparent contradiction in Ellis' work leads one to look more closely at the explanation which he gives to account for arousal-seeking behavior.

In the following quo[illegible] Ellis suggests that the arousal-seeking model works in the same manner as a drive is usually seen to operate.

> ...The drive state is usually conceived of as the accumulation of some need that at first increasingly pressures the animal to satisfy that need. The animal becomes aroused or restless, indulges in generalized seeking or appetitive behavior and continues to do so until it comes across an opportunity to emit the response that satisfies the need, the consummatory act. The act is accompanied by the reduction of the need or drive and positive effect or pleasure (Lindsley, 1964). The stress resulting from an unsatisfied need continues to build to the point where the organism is disorganized or weakened and then the behavior emitted ceases to be adaptive.
>
> The reduction of the drive presumably is pleasant and the behavior that leads to it is reinforced. The animal learns which responses will lead to a heightened drive state which is aversive. The animal tends to avoid making those responses which are aversive and vice versa. The sensoristatic or stimulus-seeking model works in exactly that way. When the primary drives are satisfied the animal continues to emit stimulus-seeking behavior in response to the sensoristatic drive. The animal learns to maintain an optimal level of arousal (Ellis, 1973:93-94).

In Figure 1, a comparison is made between the explanations for satisfied drives as they are discussed in the above statement. An obvious difficulty can be seen in the

FIGURE 2

A COMPARISON BETWEEN THE USUAL CONCEPTION OF DRIVE AND THE STIMULUS-SEEKING MODEL

A. Usual Conception of Drive	B. Stimulus-seeking Model
1. accumulated need	accumulated need for arousal
2. arousal, restlessness, seeking or appetitive behavior	arousal, seeking behavior, etc.
3. opportunity to emit the response that satisfies the need	response satisfies the need-i.e., results in stimulation which heightens arousal
4. need reduction and pleasure	need for arousal reduced
5. learning-i.e., reinforcement of successful behavior and avoidance of aversive stimulation	learning-i.e., reinforcement of responses resulting in arousal and avoidance of others

comparison of these two cases. In Case A, arousal occurs in the second phase suggesting that arousal is predictably related to any need, and this is a reasonable assumption. We regularly see such a relationship when an animal is hungry, and it becomes aroused and actively searches for food. The sensoristatic model is difficult to understand because it describes the animal as being aroused to search for arousal. In other words, if the sensoristatic drive were to operate in exactly the same way as the usual drive is assumed to operate, the animal would become aroused in phase 2 of the sequence as outlined above. What need would there be then for the animal to seek arousal? (Fowler, 1971:178) has also made the point that this type of argument is contradictory.

In addition, Ellis stated that the animal learns to maintain an optimal level of arousal and this is done by seeking novel stimuli which have an arousing potential. By definition then, the organism will most likely be satisfied by new behavior or behaviors that have not been emitted recently. Developing an expectancy which would give an organism direction in such circumstances must involve the higher brain centers. While the arousal-seeking model would only incidentally implicate the higher brain centers to direct the organism toward any arousing stimuli, everyday life experiences would suggest that these higher brain centers have a more dominant role in play behaviors. It seems plausible to suggest that play behaviors may be motivated by events in these centers.

These two demonstrations of difficulty in Ellis' position would seem to suggest that an alternative explanation could be more viable at this point. While it does not seem to be likely that this behavior can be described as driven by the need for arousal, the concept of drive may be appropriate for explaining play behaviors.

An alternative explanation.

It has been suggested above that the arousal-seeking model does not adequately describe play behavior and that it is contradictory, but there may be some merit in using the idea of a drive to explain play. It would seem to be reasonable to assume that what Ellis is referring to is a primary or unlearned drive to seek arousal. As Brown noted in his discussion of definitions of drive (Brown, 1961:44-47) there are many different ways in which drive can be defined, and an acceptable definition depends upon its utility or significance. These aspects of a definition are difficult to evaluate and "widely satisfying answers may not be available for several years, if at all" (Brown, 1961:47). It thus seems reasonable to continue this discussion by using the same conception of a drive as the one which Ellis adopted.

Nevertheless, it is worthwhile noting that according to Brown, an energizing or motivating variable may be identified on the basis of the following criteria.

> ...(1) if it tends to facilitate or energize several different responses, (2) if its termination or removal following a new response leads to the learning of that response, (3) if sudden increases in the strength of the variable lead to the abandonment of responses, and (4) if its effects on behavior cannot be attributed to other processes such as learning, sensation, innate capacities, and sets (Brown, 1961:55).

Now consider the following example of play behavior to see how it fits the usual conception of a drive. Suppose that a child is given a puzzle which is in pieces. He takes it, works with it and manages to put it together. He giggles with pleasure and ceases the activity. The next time he is presented with the puzzle he is able to do it more rapidly. An observer would say that he has learned to do the puzzle more quickly. Compare this behavior with the usual conception of a satisfied drive in Figure 2.

The second, fourth, and fifth phases fit quite well, and we are left with a question in the first and third phases. Could the presentation of a puzzle result in a need and could putting the puzzle together satisfy that need?

This example of play behavior may also be considered in terms of Brown's criteria for identifying an energizing variable as set out above. Presentation of the puzzle may have energized the responses involved in putting the puzzle together (if it tends to facilitate or energize several different responses), and removal of the problem by putting

FIGURE 3

A COMPARISON BETWEEN THE USUAL CONCEPTION OF DRIVE AND AN EXAMPLE OF PLAY BEHAVIOR

A. Usual Conception of Drive	B. Example of Play Behavior
1. accumulated need	presentation of the puzzle-could the puzzle create a need?
2. arousal, restlessness, seeking or appetitive behavior	takes the puzzle - activity suggests arousal
3. opportunity to emit the response that satisfies the need	puts it together - could putting the puzzle together satisfy a need?
4. need reduction and pleasure	giggles with pleasure and stops the activity - stopping suggests need reduction; giggles, pleasure
5. learning-i.e., reinforcement of successful behavior and avoidance of aversive stimulation	has learned to do the puzzle more quickly - learning results

the puzzle together leads to learning (if its termination or removal following a new response leads to the learning of that response). Regarding Brown's third criterion (if sudden increases in the strength of the variable lead to the abandonment of responses), many studies have led to this conclusion. According to Berlyne the higher values of arousal potential are associated with stimulation that is predominantly unpleasant and punishing (Berlyne, 1973:18). Berlyne's concept of arousal potential covers many stimulus properties, and it represents the "extent to which a stimulus is capable of raising arousal" (Berlyne, 1973:14). Miller draws a similar conclusion (Millar, 1968:45). One would expect, for example, that a very difficult puzzle would be avoided. Brown's fourth criterion (if its effects on behavior cannot be attributed to other processes such as learning, sensation, innate capacities, and sets) can be met by noting that puzzle-like situations may be described as situations involving novelty, exploration, uncertainty, dissonance, and complexity. By definition, responses to such situations cannot have been learned. Once such a response is learned, the situation ceases to be novel. In fact it seems to be the case that the difficulty with play has been to find any process to which it can be justifiably attributed.

The remainder of the argument is this section will involve an attempt to show that play should not be characterized as stimulus-seeking behavior any more than it is just useless, just surplus energy, or just recapitulation. The argument will show that from the causal point of view, play is most usefully described as a behavior which results from an unstable psychological condition.

In the preceding discussion, it was hypothesized that play is a kind of behavior which results from a drive. It was suggested that this drive was demonstrated by presenting a puzzle to a child. The child satisfied the drive by putting the puzzle together. The sequence of events which resulted when the child was given the puzzle has been shown to compare favorably with the usual conception of a drive and also to meet Brown's criteria for identifying an energizing variable. One other factor may be considered when evaluating the hypothesis--that there is a drive which underlies play behavior, and that is the physiological basis of a drive. Behaviors which are characterized as resulting from drives are generally found to originate in some physiological imbalance which represents a need in the organisms. This need is of such a nature that the behavior of the organism is to some extent regulated by it. Thus, hunger can result in a drive state but a vitamin deficiency cannot (Kling & Riggs, 1971:799).

The drive to play may also be characterized as a physiological imbalance if we admit that psychological perceptions result in physiological changes. It is a simple step to consider a physiological imbalance created by perceptions which create changes that are dissonant or conflicting. The disturbance caused by such conflict or dissonance could result in a sequence of events following naturally to arousal - activity to satisfy the need or recreate a balance, resolution of the dissonance, pleasure, and learning as shown in Figure 3.

In this way play behavior can be characterized as behavior resulting from a drive. The idea of an unstable psychological condition is not a new idea. Neither is the physiological basis for psychological events a novel suggestion. Together these ideas lead quite naturally to the suggestion that a psychological imbalance with a physiological base results in a drive to re-establish a balanced or homeostatic condition. It is also very important to note at this point that an unbalanced or dissonant state could be created by recalling stored information or by matching stored information with new stimuli.

Interpreting the available evidence.

In order to consider the suitability of the hypothesis that play results from a drive to reduce psychological dissonance, it is important to evaluate it along with the arousal seeking model in terms of the evidence which Ellis has cited as being important. In the following sections,

FIGURE 4

A COMPARISON BETWEEN THE USUAL CONCEPTION OF DRIVE AND THE DRIVE TO REDUCE PSYCHOLOGICAL CONFLICT

A. Usual Conception of Drive	B. Psych. Conflict Drive
1. accumulated need	accumulated need to resolve psychological conflict
2. arousal, restlessness, seeking or appetitive behavior	arousal, restlessness, seeking to find needed information
3. opportunity to emit the response that satisfies the need	opportunity to acquire the information that resolves the conflict
4. need reduction and pleasure	need reduction and pleasure
5. learning-i.e., reinforcement of successful behavior and avoidance of aversive stimulation	learning-i.e., reinforcement of successful behavior and avoidance of aversive stimulation

the evidence which will be considered will include the following items. The persistence of behavior which is subject to variable ratio reinforcement is considered first, and although Ellis does not discuss this, it has been considered by Berlyne. Habituation to repeated presentation of stimuli or the selective perception of novel stimuli is examined next. Then aversive effects of perceptual or sensory deprivation are discussed. The related evidence regarding a decrement in performance under conditions with few stimuli can also be treated in the discussion of sensory deprivation. Finally, the incentive value of manipulation and exploration is explained. This evidence, which has been provided by scientific investigations, will be shown to support the dissonance reduction position presented in this thesis. It will also become clear that through the use of the arousal-seeking model, one cannot adequately explain the evidence which is available.

Persistence of behavior under variable-ratio reinforcement schedules results in high resistance to extinction and psychological dissonance might help to explain this. In variable-ratio reinforcement, the average number of times that a response will be rewarded can be determined, but the number of responses which will be unrewarded before the next reinforcement occurs cannot be predicted at any moment (Berlyne, 1960:207). One might expect that a drive to reduce dissonance would result from being unable to predict success or failure or, as it is normally worded, from being unable to predict whether the behavior will be rewarded . Not only the reward is operating, but the organism is motivated as well by uncertainty or conflicting information. This explains why variable-ratio reinforcement results in such persistent forms of behavior. Gambling of course is interesting in this regard and it is quite likely that a similar state of affairs can be detected in sports and games.

Regarding the selective perception of novel stimuli, consider first of all the creation of a drive to reduce dissonance when external stimuli are involved. If a single stimulus is presented, one must assume that it could not create a drive as it has been explained unless it conflicted with previously acquired information. If a stimulus is presented which has previously created a dissonance and that dissonance has been resolved, then the problem may not arise again because, on the basis of everyday experience, one would expect the solution to the dissonance would probably have been stored. If the stored information is available for recall, there should be no need for the organism to be aroused to search for it. Therefore it would seem to be the case that only new or novel stimuli are potential creators of a need. Research has yielded results which support this assumption very clearly. Miller (Miller, 1968:45), for example, noted that familiar stimuli are ignored as are extremely novel stimuli, while a medium degree of novelty commands attention. As is noted above, Berlyne has concluded that attention is given if the stimulus has some degree of novelty, uncertainty or dissonance, or complexity. Fiske and Maddi have suggested that the impact of a stimulus is important and the impact is defined in terms of the intensity, meaningfulness, and the extent to which the stimulus differs from preceding stimulation (Fiske and Maddi, 1961:14).

The terms which these researchers use, fit easily into the proposed explanation, namely that play results from a drive to reduce psychological dissonance. Novelty, uncertainty, complexity and intensity are all words which describe the kinds of stimuli which can create a need by conflicting with other information. Dissonance, difference and meaningfulness are words which refer to the necessity for related information without which there would be no conflict.

It would seem to be the case, that the current theories cannot account for this evidence, for Berlyne observed in 1960 that the theories as they then stood, failed to predict the facts about stimulus selection (Berlyne, 1960: 164). Ertel's more recent investigations also point to the need for an explanation which takes into account the changing nature or processional properties of perception (Ertel, 1973:127). By definition the properties of novelty are always changing, and Ertel's comment supports the conclusion that the relationship between these changes and human responses have not been accounted for. Although Ellis discussed the reticulate arousal system, the selective perception of novel stimuli, and the habituation to repeated presentation of stimuli, he did not explain the effect which novelty has. He failed to say what novelty does to the organism that would account for a relationship between arousal or the reticulate arousal system, and novelty.

On the other hand, Ellis made the following statement as part of his discussion of the orienting reflex which is one example of a response to novelty.

> ...only the new stimulus events or those tied to another and important event are the subject of the reflex. The multiplicity of familiar and expected stimulus events are not attended to.
>
> The issue is simply one of selective attention. How does the animal sort from the panoply of stimulus events occurring at any given time those in which there has been a change? The animal must form expectations as a result of experience against which the current stimulus events are continuously compared (Miller, Galanter & Pribram, 1960). Lack of congruity between the current expectation and a stimulus event is signalled and attention given it. The process of monitoring the sensory input must occur automatically since only when an incongruity occurs are the activities of highest conscious centers interrupted (Ellis, 1973:84).

One could interpret this as a description of the development of psychological conflict or dissonance, and it is supportive to find such a statement included in material which interprets the results of scientific investigations in a different manner.

The evidence from some sensory deprivation studies was noted by Ellis:

> First, the deprived subject does not behave like an animal that is sub-optimally aroused. It shows restlessness, agitation and eventual disorganization. Second, the electrical activity of the brain indicates a rise in arousal rather than the opposite under these conditions (Ellis, 1973:105).

As he noted, this is paradoxical to his model in which he presents the claim that aroused organisms are receiving information. It seems a little awkward to conclude more over, that the lowered level of stimulation becomes so aversive that it becomes arousing in its own right when information is the arousing factor (Ellis, 1973:105). Once again, if arousal is possible without seeking behavior, why postulate a need to seek arousal? The contradiction inherent in this argument was discussed above. In addition, as Berlyne noted, there are several arguments against the view that abnormally low levels or arousal and abnormally high levels are aversive. In other words, the level of arousal is a less significant indication of pleasure than a change in that level.

> First, the distress occasioned by boredom (i.e., inordinately low arousal potential) seems to have more to do with the paradoxical rise in at least the autonomic and somatic indices of arousal that results from sensory deprivation. Second, everyday experience provides no reason for believing that low arousal (i.e., drowsiness) is necessarily uncomfortable(Berlyne, 1973:20).

The evidence suggests that hedonic value or pleasure results from the removal of aversive conditions (arousal reduction), or from moderate stimulation which Berlyne calls an arousal boost (Berlyne, 1973:22). It seems that these factors of change, and not the maintenance of an optimal level of arousal, account for pleasure. Even if one is quiescent therefore, indications are that removing aversive conditions and further lowering arousal, could be pleasureable.

It seems more reasonable to assume that the deprived subject represents an organsim with an unsatisfied drive to resolve psychological dissonance. One would expect a caged animal or a deprived human to have what might be called dissonance or questions. Simply being unable to confirm the texture of an object beyond a cage or prison cell would surely result in dissatisfaction. It is also interesting to note that stereotyped behavior which often results when organisms are deprived, appears to be most effectively avoided by providing information for processing (Ellis, 1973: 106). Using the arousal-seeking model, one must conclude that the addition of information would increase arousal and this would push the level of arousal higher to an even more aversive level. According to the hypothesis that this deprived condition prevents the organism from resolving dissonance, providing information could lower the level of arousal by helping to resolve the conflict.

A similiar state of affairs can be detected in the contemporary problem of the high incidence of stress diseases. While the arousal-seeking model is based on the assumption that "our major struggle is for stimulation..." (Ellis, 1973:107), it is contradictory for Ellis to note that at the same time man today is very concerned about the high incidence of stress diseases. Using his model, one must assume that in many cases the appetitive behavior results from the need to seek arousal but why would so many organisms under so much stress, be so concerned with stimulus-seeking for further arousal? If it is true that man is under stress today, then his major struggle should be for arousal reduction.

The concurrence of appetitive behavior and stress may be understood without contradiction, if the search is characterized as a search for solutions to psychological dissonance. An accumulation of dissonance may have created so much arousal that the organism is regarded as stressed. Seeking behavior would hopefully result in some degree of resolution and arousal reduction. The important question therefore is, How can this seeking behavior be directed toward appropriate information which will resolve the dissonance?

The decrement in performance which results from a lack of stimulation in repetitive tasks, can be explained in the following manner. Low levels of stimulation or situations which are devoid of novelty, should have little effect on the organism. Consequently, the attention of the organism is diverted to the most demanding alternative. That alternative may be a need for sleep, or it may be the case that a blank piece of paper is mildly dissonance-creating. Performance in such a situation where attention is diverted to other needs, would quite naturally be reduced. Those individuals who have a task to perform may learn to keep their attention on a task by creating novelty in a closely related area. This would imply that the novelty-creating response is a learned response and not a primary drive. Using the arousal-seeking model, this decrement in performance is attributed to the need for arousal, but the logic of the relationship has not been provided by Ellis. It has been observed that individuals who are required to perform monitoring tasks in such situations, tend to create novelty; but children, animals and less cultivated adults would leave if given the chance. Therefore, one must assume that this response of creating novelty is learned and not basic. If it represents an attempt to cope with aversive conditions, it certainly should not be treated as a model behavior.

Ellis' suggestion that manipulation and exploration have incentive value, seems to be interpretable as meaning that manipulation and exploration are rewarding or reinforcing. While it can be admitted that reinforcement does occur as a result of exploration, the nature of this reinforcement, as Ellis describes it, is disputable. One must ask if the behavior is reinforced because it is simply arousing, or because it resolves psychological dissonance. Arousal-seeking does not seem to explain the meaningfulness or significance which is usually attached to play behaviors. For example, one of the most important questions which Ellis asks, is the following one:

> How do we inherit the effector organs and responses necessary for the new conditions ahead that by definition can not yet be defined (Ellis, 1973:114)?

He concluded that all that is required is the "predisposition to be rewarded by the emission of new responses and the occurrence of stimulus events" (Ellis, 1973:114). But the arousal-seeking model is not based upon an explanation of why novelty is arousing. Experiments show that novel stimuli are selectively perceived, and the search for a solution to dissonance does explain this. In an unfamiliar environment, new stimuli can by conflicting with old information, create dissonance or a specific need for previously unknown kinds of information. Thus Ashby's quote which Ellis recorded is particularly appropriate:

> This is the learning mechanism. Its peculiarity is that the gene-pattern delegates part of its control over the organism to the environment. Thus it does not specify in detail how a kitten shall catch a mouse, but provides a learning mechanism and a tendency to play, so that it is the mouse which teaches the kitten the finer points of how to catch mice (Ashby, 1960:234).

Thus the human like the kitten, can adapt by responding to the dissonance created by novelty in the environment.

Summary

In the above argument, an attempt has been made to show that arousal is not the end product of play behavior, nor is a need for arousal the motivating force behind play behaviors. Arousal does occur during play however, and it has a significant function. When the organism is aroused as it is in any drive state, it is mobilized to satisfy a need.

Several different needs such as hunger and thirst have been shown to have the capacity to arouse an organism. Physiologically-based psychological dissonance may also have this capacity. The consequent restlessness, seeking, or appetitive behavior which may lead to a resolution of the dissonance, may be described as play. Such an explanation accounts for the selective perception of novel stimuli, the aroused behavior of sensorily-deprived organisms, and the incentive value of manipulation and exploration. This explanation is also in harmony with most of the ideas in the literature on the subject of play.

Elaborating on the Meaning of "Play"

In the preceding section, the conception of play which was derived from the literature, was shown to be useful for interpreting the results of scientific investigation. As was suggested in chapter one, this demonstrates that explorations of the literature have a function which complements scientific investigations. Since true statements from any one approach should agree with true statements from another, one would expect this to be the case. On the assumption that the interpretation in the previous section is a viable one, it is now possible to re-examine the literature in order to show how it may be used to elaborate upon the meaning of play.

In the following discussion, a brief review of several aspects of play is made. The basic conception of play which was formulated in chapter three, the everyday language definition which was presented, the discussion involving the interpretation of scientific evidence, and the causal definition of "play" are all used in this examination of the meanings of play. Meaning may be interpreted using any of these sources of information. It should be made evident, however, that each of these sources are consistent with the others and all of them are based upon the themes which were found in the literature on play.

In this discussion, the purpose was not to construct a concise argument about the meaning of play. The subject is much too broad for such a treatment to be given in one study. Rather, the following section represents an attempt to show that interpretations of play are possible on the basis of the preceding discussions. Hopefully, this section will suggest some avenues which are worthy of pursuit. Perhaps later, it will be possible to complete such interpretations in detail.

This section is organized in the following manner. First, the discussion will cover some of the more abstract characteristics of play such as the notion that play is free behavior, and the notion that play is culturally significant. This will serve to elaborate further upon some of the attributes of play. Next, since play can be seen to occur in a variety of human endeavors such as work or games or art, these contextual aspects of play will also be reviewed.

The attributes of play

In chapter one, brief consideration was given to such notions as that true play is associated with the highest level of cultural development, that play is serious, and that play is freedom. In terms of the preceding definition of play, some of these statements can be better interpreted for contemporary physical educators.

Consider first of all, the notion that play is culturally significant. In play, the individual may be regarded as one who is pushing forward on the frontiers of his psychological capacity. He must find solutions which he has never found before. A new difficulty needs to be overcome. By definition, any problem which has already been solved, no longer has the capacity to disturb the individual. A new difficulty, which is new for everyone else as well as the individual who is trying to find a solution, may be regarded as a question on the frontier of the culture. When it is answered, the culture may change, and to use Rahner's term, a "higher" level of cultural development can be achieved.

One may also consider the meaning of the relationship between movement and play. In discussing the eutrapelos it was noted that man should be nimble. It is also significant that Huizinga found in his analysis of play words in many different languages, that the semantic starting point for many play words was a word for rapid movement. Could the implication be that when a solution to a question is not immediately apparent, the individual must move to find a solution, and that this movement may take a psychological dimension, a physical dimension, or a combination of these? The word "play" must be related to the kind of movement which is somewhat influenced by external factors. It is not rigid, in one direction, and unalterable. The distinction must also be made between playful movement and the kind of movement which may be described as foolish, erratic movement, where the organism appears to have no control. In such a case one must assume that too much of the control is abandoned to outside forces, and the movement is then governed by these forces. In the psychological sense, one would expect that if play words are so frequently derived from words meaning rapid movement, that it is common for man to have the feeling that his mind is moving rapidly in play situations.

The concurrence of fun and seriousness in play, is an aspect of the behavior which requires explanation. As Rahner pointed out, the classical writers perceived fun and gravity to be related (Rahner, 1972:9). Fun and play have often been related, and the idea of play as a drive resulting from psychological dissonance, explains this relationship. Fun can be regarded as the pleasure accompanying the satisfaction of the need for appropriate information--a pleasure resulting from the re-establishment of a more stable or homeostatic condition. Gravity or seriousness is related to play and fun because this homeostatic condition is critical to the organism's well being. Thus, it is reasonable to conclude that an individual would play very earnestly or seriously and have fun at the same time. One would anticipate that frivilous play or non-serious play, like rigid play, would reduce the chance that a solution would be found, and as a consequence the fun of playing would also lessen.

Freedom is a commonly mentioned attribute of play. The following quote expresses in a typical way, the relationship between play and freedom:

> ...the world of play is the world of freedom itself--of activity for its own sake, of spontenaity, of pure realization (Rahner, 1972:ix).

The conception of play which has been presented here, does place an emphasis upon the necessity of play. It has been shown that play results from a need, and one can assume that unless that need is satisfied, the organism will not be well. Thus it is necessary to play, and to play as the need determines that one must play. The health of the organism depends upon the satisfaction of the need, or the solution of the psychological difficulty. On the other hand, it is also necessary for the organism to have freedom if play is to take place. In terms of the psychological difficulty, it can be identified as related to the importance of being able to consider many alternatives. Constraints upon the behavior of the organism may result in circumstances where suitable information cannot be obtained. For example, if one child is challenged by another child to a race, and his mother does not permit him to run, his behavior has been constrained; he cannot resolve the question about his ability to run.

Play in the context of specific endeavors

If play is to be regarded as a large part of the broad category of information-seeking, there are many behaviors which must be related to it. Art, for example, may be based upon a predominance of the kind of psychological functioning which is called play. The relationship between art and play has often been commented upon, and Shiller's work on this relationship is a notable example which continues to be of importance to artists (Hein, 1968). In both play and art, the behavior is expressive of the current condition of the individual. The consequence of the behavior may be significant only to the individual, or in a few cases, this product may be meaningful to many. Perhaps it can be said that success in artistic endeavors is related to the ability to play. Artists are often regarded as persons who work at the frontiers of knowledge, and play has been discussed as a suitable behavior for dealing with the novelty which is characteristic of such circumstances.

Perhaps the most controversial relationship in the contemporary literature on play, is the relationship between play and work. The arguments about play and seriousness are similar to those about play and work. Consider first of all, some aspects of the arguments about play and seriousness. Explaining play as a drive-based behavior has helped to show that it is a necessary and serious behavior. Although the question of the seriousness of play has been treated in the literature with somewhat contradictory results, it seems to be the case that where play is regarded as a serious behavior, the necessity of, or absorption in play, is what is being discussed. On the other hand, it is common to find writers who oppose play and seriousness. These writers appear to be drawing the conclusion that since they often cannot identify the product of play, unless it is a product which could be acquired more efficiently by some other means, that it is useless, frivilous activity. But it is to be expected that few of the products of play behaviors can be acquired efficiently since novel situations are difficult to deal with. Once one has found a solution to a problem however, it is always easier to find it a second time. Thus, the experienced individual often is able to recognize the errors, the wrong choices, and the useless attempts which the inexperienced individual may make in his play. He may want to show the newcomer just how this problem can be solved. From his point of view, any explorations are unnecessary and somewhat useless.

Work, like seriousness, has been set in contrast with play although some investigators of play have concluded that this is a superficial distinction. Ong for example, made the following statement:

> The best players in any field are those for whom the game is in fact work, a means of livelihood, and the best workers in any field are those for whom their work is a kind of play.... (Ong, in Rahner, 1972:x).

The suggestion that work and play are complementary behaviors rather than opposites, has been made with increasing frequency in recent times. Work has generally been tied to productivity, to satisfying basic needs and meeting commitments, and the distinction between work and play is probably based upon the same reasoning as the distinction between seriousness and play discussed above. The productivity during play is at a minimum because the individual's efforts are drawn toward the exploration of novel or unknown elements in the situation. In dealing with novelty, play is probably the most productive kind of behavior. Since an individual would most quickly reach a solution to a novel problem by playing, then if the productivity is the criterion, the best worker in this situation is the best player. Many work situations do not require solutions to novel problems, and where a routine solution is abandoned in favor of playful behavior, the productivity may be reduced. Many work situations probably demand a combination of these two approaches for at one time, a playful approach may be the most effective and at another, a routine may be followed for best results.

The idea of a game has generally been tied very closely to play, and the expression "playing a game" is evidence of this connection. It seems that it would be legitimate to claim that the behavior which has been described as play, is a kind of behavior which is very closely related to games. This relationship can be described in terms of the preceding definition of play. Piaget's work (Piaget, 1951) has shown that rule development is an important aspect of the change from what he called the play of young children, to that behavior of older children which has been called games. If young children play and older children play games, we may conclude on the basis of Piaget's work, that an important difference between playing and playing games, is the appearance of rules in games. Games may thus be described as formalized cases of play behavior. In the preceding chapters play has been defined as behavior resulting from a psychological difficulty. It seems reasonable to assume that a particular kind of play becomes formalized when it has been repeated many times. Therefore, any situation which presents a persistent difficulty, is most likely to be associated with game behavior.

Piaget's work might lead to another suggestion about the relationship between play and games. It should be noted that he would have preferred to have the explanation for play which has been presented in chapter two, divided in half. Piaget would separate imitation, or adapting to the environment, from play, or adapting the environment to suit the individual. Such a narrow definition of the English word did not seem to be legitimate however. As was noted in the earlier discussion of Piaget's work, one regularly uses "play" in English, to refer to imitation behavior. For example, the child who is pretending, is a playing child. Also, the work play is regularly used to refer to the adult's dramatic production. Thus it would seem to be better not to exclude imitation from "play". Piaget's division between these two kinds of behavior--adapting oneself or adapting the environment--is more important than the names he has given them and the distinction may be found to be more significant when applied to the more formalized behaviors found in games and dramatic performances. It would define two categories of formalized play--one category of games which involve a predominance of assimilation, and one category of dramatic acting involving a predominance of accommodation.

Since games seem to disappear as children mature, one can presume, that they have learned to understand the difficulties which underlay the games. Some games seem to persist into adult life. Games of chess, gambling games, and the game of science may be viewed as persistent, for contemporary adults continue to occupy themselves with these activities. It has been suggested that there is a persistent recurrence of difficulty in games which is the reason for the formalization of the behavior. If the play content of games is significant, it may also be possible to assume that both a reduction of the difficulty, and pleasure, have a role in games. Since games are described as fun, it must be concluded that at least some reduction of difficulty takes place. Much of the difficulty must persist however, if the activity is to remain attractive to the individual. Therefore it must be concluded that the fun and pleasure which is experienced, is derived from partial solutions. Indeed, in research, chess, and gambling, the final answer is never acquired. The researcher always finds that another question grows from his answers, the chess champion can always find a new challenge even if he has to play several opponents at once, and gambler is always faced with the possibility of even greater winnings.

In the preceding discussion of play and games, it was suggested that play becomes more formalized or structured in games. Games are found in many different human endeavors, from research to leisure pursuits. It should be noted that while the capacity to play games is preceded by play, this ability to play games does not depend entirely upon the intellectual development of the individual. Games result from the recurrence or persistence of a difficulty which is playfully treated. It is the repetition which leads to rule formation. Therefore at almost any age or level of development, games may be important. Similarly, play should be expected to predominate in relatively new situations at every age level, and at every level of intellectual development.

Sport is a second kind of behavior which is commonly regarded as a form of play. In relation to the above discussions of play and games, it is possible to make some comments regarding the nature of sport. In play, it has been shown, that the individual explores to find solutions to difficulties. In games, this exploration becomes rule-bound because of repetition. In sport, the search for a solution--and the rules--appear to remain, but some differences in these factors can be detected. One difference is apparent in the nature of the difficulty. The emphasis begins to be placed upon the unfamiliar elements or novelty which the player can introduce into the situation; and not upon the novelty which is already present. Take hockey as an example of a sporting activity. Before the league play begins, there is generally a period of time when each team prepares to meet other teams. The success of a particular team may depend upon whether or not that team can develop a play which the opposing teams cannot counter. This may be regarded as the development of the ability to be novel or unpredictable. It is manifested at the individual level in the ability to "fake out" an opponent. One might say that the ability to be unpredictable is beyond the ability to follow rules. The player who can "fake out" his oppnnent must have mastered the rule-governed aspects of the game first. He must be able to perform well enough to make his opponent believe that he will, let us say, skate to the right when he actually intends to skate to the left. In a physical activity this may involve actually beginning the movement to the right and then switching to the left. A fake movement is surplus movement and it would undoubtedly be regarded as ineffecient in ordinary circumstances, for a skater to engage in such surplus movement if his objective is to get to the other end of the rink. If he slips because he started to go in the wrong direction, he looks foolish indeed. If the sportsman succeeds, in misleading his opponent however, he is brilliant. The purposeful introduction of novelty is thus of great interest in sport. What makes the purposely introduced novelty important in sport? It seems to be the case, that the opponent makes the difference. The fake movement is ineffective and unnecessary without the opponent. Perhaps the idea of this opponent could be generalized to designate opposing forces in any situation. Thus the animal which is hunted, the apparatus which is used, or the opposing team in a competition, could all represent the opponent. In order to be the master in a confrontation with this opponent, one must be thoroughly aware of the opponent's behavior. If the opponent is similiarly aware and skills are closely matched between the two players, then the success of either one may depend upon the introduction of new factors which are unfamiliar to the other.

Since the introduction or invocation of unfamiliar factors may have various unpredictable effects upon the individuals who take the initiative to introduce them, such action is generally taken only by those who have mastered most of the familiar and accepted possibilities.

Thus, sport may be regarded as the behavior which is the most aggressively exploratory. Not only does the individual deal in play with the difficulties which confront him in every day life, and in games with those difficulties which are most persistent, but he may also encourage or pursue the impact of additional novelty. The question "Why?" is difficult to answer with any certainty at this point. Sport is a rather complicated behavior and it seems that several factors could be involved in its motivation. On the basis of the preceding discussion however, one might expect that from the exploration of novel or unfamiliar phenomena, an individual learns to expect to deal with novelty. Then even though he does not know exactly what it is that is novel, his belief that unfamiliar phenomena do exist, is sufficient to create a disturbance which motivates him in the same manner as if he were playing.

Guiding Play Behavior

The most useful comments which can be made regarding the guidance of play behavior are those which will show what might be done to preserve and develop the basic ability to play. In many cases, further investigation is required, and the comments regarding the guidance of play are simply hypotheses. As was noted in beginning this study, however, the generation of hypotheses and particularly of testable hypotheses is itself a worthwhile endeavor.

This section is organized to deal first with examples of issues in play in general, second, with issues in formalized play or games, and third, with issues in aggressive play or sport. Finally, the discussion deals with the relationship between play and physical education.

Play.

As "play" has been defined, it is a very large category of behavior, and it may be found in many spheres of human activity. Perhaps the most important factor in guiding play, wherever it may be found, is the emphasis which must be placed upon the cause of the behavior rather upon the result. Play has been described as a kind of "seeking behavior" which results from a psychological disturbance. During this seeking or exploration, one would expect that the individual may consider any number of alternatives but that he will choose only the information which helps to reduce the disturbance. Thus, in attempting to guide the behavior, it is important to focus upon the creation of appropriate problems and the supply of adequate amounts of suitable information for exploration.

Regarding the creation of appropriate problems, the experimental evidence indicates that moderate unfamiliarity (as contrasted with extreme unfamiliarity or familiarity), is most readily responded to by the individual. Thus, it is important to watch for signs of either too much or too little novelty. In the former case one would expect to observe "retreating behavior," and in the latter case an absence of any response related to the information. In physical education these signs may be characterized by the following examples. The child who is in a high jumping class and finds jumping difficult may make one attempt and find that he fails to clear the bar. A classmate comments about his failure, and he then decides that he has had enough. He decides to quit, and he leaves to sit down. He has retreated from a situation which is too difficult. Another child has had many experiences with jumping, and he is able to clear the bar with a large margin each time. Since he is in a group of children with less ability, he must continue to work at a level which he finds too easy. He begins to wonder whether these other children really are inferior in ability, and then seeks to investigate this new and more interesting problem. He begins to punch the child who is in line ahead of him -- he has ceased to respond to the problem of jumping and has instead become interested in another problem.

As well as the intensity of the disturbance, the nature of the disturbance may vary. Since each individual is different, the difficulties which each one experiences will also be different. The understanding and control of the nature and resolution of this difficulty is therefore often beyond the mind of any other individual. This is perhaps the state of affairs which man may wish to maintain, for, if one is able to control the explorations of another, these explorations can contribute nothing new to the individual in control. Therefore, in order to derive benefit from someone else's explorations, it seems that these explorations must be allowed to take their own course.

For some time pressure has been placed upon educational institutions to allow for more exploration. Neill, for example, incorporated more play in his school at Summerhill.

> The adult attitude toward play is quite arbitrary. We, the old, map out a child's timetable: Learn from nine till twelve and then an hour for lunch; and again lessons until three. If a free child were asked to make a timetable,

> he would almost certainly give to play many periods and to lessons only a few.
>
> Fear is at the root of adult antagonism to children's play. Hundreds of times I have heard the anxious query, "But if my boy plays all day, how will he ever learn anything: how will he ever pass exams?" Very few will accept my answer, "If your child plays all he wants to play, he will be able to pass college entrance exams after two years' intensive study, instead of the usual five, six, or seven years of learning in a school that discounts play as a factor in life" (Neill, 1960: 64).

Summerhill is a school which has demonstrated that children do learn when they are free to respond in their own way. Another example of successful guidance may be found in the literature on non-directive play therapy. Here, the therapist tends not to govern the child's behavior.

> Non-directive therapy is based upon the assumption that the individual has within himself, not only the ability to solve his own problems satisfactorily, but also this growth impulse that makes mature behavior more satisfying than immature behavior (Axline, 1969:15).

In play therapy, one can observe the child solving his most serious problems through play, and the growth impulse which Axline referred to may be identified with the drive to reduce psychological dissonance. In cases where play therapy is applied, this dissonance may be so severe that it results in problem behaviors. It seems that perhaps the environments in which such children live are to restrictive, and the therapy may succeed simply because it allows for the exploration of information which has been unavailable but which the child has needed in order to solve his problem). These examples tend to encourage a laissez-faire attitude and, in many instances, such an attitude may be the most desirable. Nevertheless, human beings tend to give assistance to others whether this is requested or not and it is also common for one to seek the assistance of others when in difficulty. Therefore, it is probably possible for an experienced individual to help a less experienced one by introducing him to information which will help to solve a difficulty. Similarly, one could stimulate the activity of others by introducing ideas which create conflict. This would often seem to be a more effective way of motivating a child than promising a reward.

For example, a child will sometimes hesitate when someone offers him a candy for stepping into the cool swimming pool, while the same child will happily freeze his feet in the springtime puddles in which his mother has forbidden him to play. Sometimes a challenge will get the child into the pool as well. Many persons will remember cases where an uncle has come along and said, "you can't go in that pool!" The child responds by happily jumping in! This kind of motivation by creating dissonance is undoubtedly one of the most effective. It is well known to children who commonly shout challenges to each other that would make most adults retreat. There are risks involved, however, and the possibility of alienating or over-stimulating a child is certainly one of these risks.

Regarding the guidance of behavior in games, perhaps the first factor which needs to be given consideration, is the popular adult attitude toward playing a game. Similarities between games and research have often been noted, and McCain and Segal, for example, have suggested that science may be considered to be a game:

> Because of the similarities between the attractions of science and those of a diversity of games, we can consider science a game (McCain and Segal, 1969:viii).

Such comments as this are common not only in science, but in business, social life and so on. The gaming nature of these endeavors may stem from the puzzling elements in each area. It is also interesting to note however, that such comments as the one above are often derogatory. When this is the case, the unproductiveness of a game, or the seemingly artificial nature of the rules, is usually noticed. The discussions above have shown that both of these characteristics are inherent in games and in life. When a solution to a problem is not available, behavior is likely to be unproductive.. Rules do give structure to human experiences. One may ask, therefore, whether derogatory comments stem from the misunderstanding of the functions of rules and of the difficulties of producing answers, or from the observation that people are not really trying to find solutions.

A comparison can be drawn between the player and the researcher. Rules are used to define the problem and also to narrow down the number of approaches which will be considered in looking for a solution. The difference between the rules in a game and the rules in a scientific experiment may be attributable to the difference in the preciseness of the problem. There seems to be less precision in the problem which is confronted in a game, and any explanation which one can derive from a game situation is at best only a partial solution. To what causes can the results of a game be attributed? One only needs to listen to a post-game conversation to see that this is an important but difficult question to answer.

The rules for games may also reflect the human element in the subject matter. Considering the fact that the human being has used games for centuries to test varying aspects of human nature, it may be the case that games contain some significant ideas for research in psychology as well as other humanistic fields. For example, it is interesting to note that the game is generally formed around a set goal, and the discovery is made by varying the procedure to reach this goal. But research is often arranged on the basis of a set procedure with discoveries made on the basis of the results. The player hopes that he can reach a set outcome regardless of the methods he uses, and he learns from the effectiveness of the methods. The researcher attempts to specify his methods, so that he can learn from differences in the results. This difference can be identified with the difference between validation and discovery, for the formal research situation is predicated upon having an hypothesis which is worth testing or validating. When results can be controlled by the use of a set procedure, a connection has already been established between the results and procedure. In the case of discovery, there often is no single hypothesis regarding a relationship between procedure and a result. It is therefore better to consider many procedures. It would be worthwhile to examine the number of scientific theories which have developed from games. Probability theory, for example, developed from games of chance.

Another aspect of games which might be given consideration is their deliberate use in education. The usefulness of card games for learning about numbers, pinball machines for studying reflection, physical activities for learning about physics, and hunting for learning about animals are only beginning to be explored.

In considering sport, which has been identified as the most aggressive form of exploratory behavior, recommendations can be made regarding the issue of the importance of winning and the question of amateurism. A great deal of searching is probably required before one can say what the questions are which drive the sportsman. They are not always apparent, and probably half the problem is figuring out what they are. In many cases, one should be cautioned against assuming that winning a game resolves dissonance. It may be the case that games are simply the structures which help individuals to ask questions or solve parts of very difficult problems, and that the fun of playing is related to the partial answers or further questions which are suggested to the player during the game. It would be interesting though, to measure the relationship between winning or losing, and continuing to play in games.

How much of the answer to any dissonance can we assume is being generated by the result of a game? This is a complex question because learning is probably involved. The problem can be approached by considering the case of a child in a sports-like situation. Suppose one boy meets another and the first says he can run faster than anyone. The second has never had anyone run faster than him and, when he hears this, he feels challenged. He has always been the fastest runner; so, on the basis of experience, he still should be the fastest. But this other boy has just said something which conflicts with his experiences. How can he resolve this difficulty? They race, but the second boy obtained a "head start". Then the first claims that he slipped as they tried a second time. They make rules in an attempt to solve the problem. A third boy is to give a signal before they begin. They will start from a line marked on the ground. They will run to a mark across the yard. These rules are necessary to eliminate intervening variables in the attempt to arrive at a solution to the problem. Adults behave similarly, and the Olympic Games probably represent man's best attempts to resolve this problem. The rules have enabled the players to behave in a manner which serves their purposes. Their purpose, in this case, was to answer a question.

There is more to this situation than finding out who can run the fastest. Perhaps it is even misleading to describe the issue in such a manner, because the preceding condition, or the problem, is the most important issue, and it arises because the individual has received conflicting information. Although it may appear to be the case that the solution rests in testing the physical ability of one individual versus the other, it may be that these capabilities are of lesser importance than psychological factors such as the level of motivation, self esteem, etc.,or it may be the case that the Greeks were on to something when they let the gods decide who to favor in a race. What the athlete seeks is a solution to the problem or dissonance--whatever the solution may involve. He does not necessarily seek that solution in his body and his exercise; he may also seek it in his mind and in what have been called spiritual phenomena. We might say that the captivating aspect of participating in the race was not what he knew from previous experience, nor what he might learn from the challenge that was presented, nor the satisfaction of being a winner, but simply what he didn't know and was driven to find. Even if he wins or loses, he may not be completely satisfied, because he may have difficulty explaining the result of the race.

A player can learn to attribute significance to the result of his play activity, however, or he may falsely assume that he has solved the dissonance. He may conclude that he is the greatest runner in the world. The current emphasis on reinforcement and the learning of correct response patterns may make attention to dissonance unfamiliar, by shifting the emphasis to external rewards delivered to encourage approved responses. Similarly, the sportsman may learn to not pay attention to dissonance. Nevertheless, suitable stimulation may occur which results in further questioning. In the case of a player, such stimulation may lead him to question the meaning of winning. He may previously have ignored this same stimulation because it was unfamiliar.

As was noted in the above example of the children in the race, they were struggling with the formation of rules which would enable them to solve their problem. A similar kind of struggle is seen in adult behavior at the Olympic Games:

> Hypocrisy is truly the chief culprit where amateurism is concerned. In the Winter Olympics of the same Olympiad, Marc Hodler, the president of the International Ski Federation sought in vain to get Avery Brundage to face up to this fact. After threats of their withdrawal or expulsion, the skiers were permitted to ski in the Olympic Games but only after Karl Schranz, generally conceded to be the world's best skier, had been barred as a concession to Brundage (Keeting in Osterhoudt, 1973:173).

Here, in a discussion of the 1968 Olympics, we are confronted with one of the problems which arise in rule formation. Assume that like the young boys racing in the earlier discussion, these adults are formulating rules in order to eliminate a number of factors which seem to influence the result. It is important to consider how the rules change the nature of the contest. If the players are permitted to make money, then perhaps the result of the contest will be predetermined. For example, we may ask whether it is possible to see a poor man run faster than a rich man, or whether it is better to give the poor man the same economic advantages as the rich man, and then have them race. In the first case the implication may be that there are more powerful factors than economic advantages, or that the economic advantages of an individual may also work to his disadvantage. At any rate, if economic variations are kept in the system, they may influence the outcome. In the second case, if the economic factors are excluded, then it must be assumed that other factors which are of greater interest are being camouflaged by these economic factors. The author in the above quote seems to be saying that, with an unenforced rule, neither case can be assumed to exist. Before questioning the enforcement of such a rule, however, it is important to consider how to construct a contest which will yield the most beneficial results. Perhaps the question of amateurism is not really an economic issue at all, but an issue concerning the placement of the emphasis on the consequences of the behavior rather than the antecedent conditions and the process. If athletes truly do invoke unfamiliar elements into their performances, then they risk too much to worry about remuneration. The best sportsmen are therefore not always recognized, for their explorations may lead them away from winning, but for the the amateur this may be the best way to play.

Physical education.

In physical education, each of the above areas are important - play, games and sports - but there are some additional aspects which merit consideration. One of these is the relationship between health and physical education. In order to be healthy, the needs of organisms must be satisfied. Health may be related to play in this manner. The physical health benefits of activity have been among the prime concerns of physical educators, and it is interesting to look at this traditional concern with the products of physical activity.

Prior to 1900, physical education in Canada developed in a rather fragmentary manner. From 1900 to 1920, largely because of the establishment of the Strathcona Truat Fund, military drill and physical education were equated. The concern with health alternated with the military emphasis during the wars, but World War II was followed by a period of concentrated interest in fitness (Cosentino, 1970: 26-57).

The emphasis on drill and physical fitness reflected the recognition of the fact that daily life was not sufficiently vigorous. The same concern over the inadequate fitness level of school children was evident in the work of many European writers whose prescriptions for movement in the physical education classes were adopted in Canada. There were difficulties with prescribed programs and Maria Montessori described the European situation as follows:

> In ordinary schools the term "gymnastics" is given to a kind of group activity which aims at disciplining the muscles of a whole class in unison. There is also a more formal type of gymnastics which tends toward acrobatics.
>
> These different types of movement have been found useful to counterbalance the muscular inertia of pupils who have to lead a sedentary life and keep a regularly ordered position in class by remaining seated at their wooden desks. Gymnastics thus represents an enforced remedy against an imposed evil; and nothing is more characteristic or symbolic of the old regime than this action and reaction imposed by the teacher, who tyrannically increases evils and remedies for the passive disciplined child (Montessori, 1967:79).

The problem of inactivity in educational institutions seems to be one which resulted from the attempt to prescribe - almost completely - a way of life for school children. The lack of fitness was perhaps the most obvious example of the inadequacies inherent in such an approach.

The prescribed school programs in Canada were first supplemented with prescribed physical education programs designed to promote the physical health of school children. With the trend away from prescribed programs in some parts of the world, educators like Maria Montessori re-introduced movement into other aspects of education. But even when this was done, there was an evident need for more vigorous activity. The problem of "contrived or prescribed" versus "natural situations" in educational institutions is still an important one, and physical educators have responded in various ways.

Most contemporary physical educators in Canada have placed an increased emphasis on games, dance, and sports, and these are more natural forms of activity. It was probably apparent that not only did the children counteract inactivity through participation in these activities, but also they had fun. The happy result was that they were even more active than in the formal prescribed situation.

A similar emphasis on the product of the activities was popular in the universities. The introduction of physical education into the school systems established the need for trained teachers, and research in physical education was required in order to develop and improve the teacher training programs. Naturally, this research was focussed on the problem of inactivity and the need for fitness. This emphasis on fitness was enhanced by the federal government's concern over national fitness. The two world wars increased this concern over fitness for national defense; the American Kraus-Weber tests suggested that Canadians as well as Americans were less fit than the Europeans, and the Duke of Edinburgh's 1959 speech to the Canadian Medical Association challenged them to work for better health and fitness. All these supportive influences were welcomed by physical educators, but they did place an overwhelming emphasis on fitness in physical education curricula.

The need for fitness research has not been dispelled, for technological advances continue to encourage inactivity. However, there has been a change in the relative importance of researching some other phenomena in physical education. Psychological factors such as the relationship between perceptual-motor development and academic achievement, or social problems such as the social mobility achieved by the lower class citizen who succeeds in sport, are increasingly important and deserve more attention.

An important consequence of the emphasis on fitness was that it facilitated the dominance of the scientific method in physical education research. The scientific method was highly regarded in most academic disciplines, and physical educators who were striving to establish the academic nature of their subject were most effective if they adopted the scientific method and concentrated on the aspects of their subject which were most susceptible to systematic analysis. This emphasis is still in effect and, as a consequence, physical educators have focused their attention mainly on the products of physical education--those measurable entities which were left after the activities were ended.

A problem in the theoretical concerns of physical education is evident here, for while physical educators praise the athlete who participates just for the sake of the game, they are focusing their theoretical investigations on the products of the game. The dilemma here is the same one which underlies, among others, the amateurism problem. We cannot say anything about playing just for the sake of the game until we take a better look at the game itself--and not just the products of the game. Viewing play as a drive to reduce psychological dissonance offers one approach which can be used to look at the game itself.

Another consideration is that because play is exploratory behavior, there is a high probability that the person will behave in an unadapted, impractical or even dangerous manner. This brings a serious challenge to a discipline which emphasizes healthiness, and it also brings up one of the most perplexing dilemmas for the professional person in physical education. Consider, for example, a three year old child, playing with hammer and nails in an adventure playground. If the supervisor is primarily concerned with the child's health, will he remove the child and save him from hammering his fingers, or will he let him play and possibly hurt himself? The point has been made in a text on adventure playgrounds, "Living is dangerous and the more you live the more dangerous it is" (source unknown).

Movement has been treated as a critical aspect of physical education (Stone in Osterhoudt, 1973:39) and such relationships as that relationship between the word "play" and the word "movement" was noted in chapter two. Words that were used to refer to rapid movement also used to refer to play. Arousal is often identified by an increased activity level. In chapter three, play was defined as a dynamic activity which involves a balance between two extremes. extremes. Thus, the physical movement characteristically associated with play is an important factor for identifying play.

Several unanswered questions remain, and perhaps the most important one for contemporary man is, "what are the characteristics of a drive to play which arouses the individual to a sufficiently vigorous kind of physical activity so that an adequate level of physical fitness can be maintained"? Perhaps persistent problems which are found in games and sports can give some clues to this problem.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of the thesis was to work toward a definition of "play" which would be useful in physical education. In order to do this, it was necessary to describe play behavior. Major works on the subject of play were therefore reviewed, and seven themes in the literature were used to describe play behavior.

The seven themes included the notion that play is a balance between two extremes, that it is important, that it is pleasurable, that it is dynamic, that it is related to the unknown, that it results in learning and that it results in surprising consequences. Using these themes, play was characterized as a behavior which results at times when an absence of harmony or a dissonance in the psychological component of an individual is the dominating force in the behavior of that individual. In attempting to resolve this dissonance, by searching for new information, play or a variety of what might be organism-dominated or environment-dominated behaviors are exhibited. New information is often received as a result of this behavior, learning results, and when the information provides a return to harmony, the experience is regarded as pelasurable.

On the basis of this description of play behavior it was possible to suggest a definition of play which would be useful in physical education. "Play" was said to be an activity in which man, seeking to reduce his psychological dissonance or disharmony searches for new information to assist in the development of a dynamic balance between the two extremes of behavioral situations that are characterized either by organism- or environment-domination. Such a broad definition is consistent with the derivation of play words. It also emphasizes the play process and not the preceding conditions or the consequences -- and since play is an activity such an emphasis on process is appropriate. As well, the process is the most observable aspect of play; so, such a definition would facilitate the identification of play behavior. Finally, the emphasis on physical movement in physical education may be most effectively integrated with a characterization of play which emphasizes psychological activity. A different emphasis or a more limited definition of "play" may be more useful in specific situations. Experimental evidence, for example, may be explained more effectively by focusing upon the cause of play behavior rather than the process. For such purposes, play may be defined as behavior resulting from psychological discomfort created by a need for information which is not readily available.

In order to show that such an approach to play is useful, this characterization of the behavior was shown to be helpful in the explanation of scientific evidence resulting from experimental studies, for expanding upon the meaning of play and for guiding play behavior.

The attributes of play - the movement, the fun and seriousness, the cultural significance and the freedom associated with play - were discussed in terms of the proposed conception of play. To the extent that play is of concern to physical educators, these aspects require further investigation. Some studies should be done to determine the cultural significance of various play forms. To what extent are new inventions and new theories the result of play? To what extent do formalized kinds of play, such as games of chance or football, lead to new notions like probability theory and the study of interaction in large systems? Playful movement may be the most fruitful topic of investigation for those who wish to understand the relationships between the mind and the body, since play is dynamic in a psychological sense and in a physical sense. The discovery of criteria for "serious fun" in play may help physical educators to give guidance in playful situations. The study of these aspects, and the study of the nature of freedom in play, will surely contribute to the development of an environment which is conducive to human life.

When play is studied within the context of specific endeavors, the issues become more complex and difficult to understand. In art, the most desirable conditions might vary from individual to individual and from art form to art form. Nevertheless, it would be interesting to explore the different kinds of impact created by novel environments and by challenges which introduce dissonance. In dance, for example, some interesting work could be done with children. In work environments, it would be useful to study the opportunities for playful behavior -- and particularly so for physically active playful behavior. The factors which inspire physically active playful behavior need to be given serious consideration. Variations in the conditions will undoubtedly be found among individuals. As well, one would expect to find variations in the proportion of playful behavior to non-playful behavior which individuals find most desirable.

The importance of games and sports, particularly among adults, has most certainly been underestimated by physical educators and by others. If these forms of behavior do represent exploratory and information-seeking behavior among adults, then it will profit many who seek to understand learning, leisure and cultural development (among other things) to examine the phenomena of games and sport. The attractiveness of these activities may be examined under varying conditions. The structure and changes in the structure of games and sport are worthy of attention. Related to these topics, it would be useful to examine the conditions which foster adventure, exploration and risk-taking in man. Finally, it would be interesting to examine the structures of games and sports to determine the relationships between these and other similar structures such as those formed by the rules of science and those formed by the rules of societies. It may be the case, for example, that the rules of games and sports serve to foster change while the rules of research foster stability and the rules of societies foster conservation. Recognition of the different structures within which one may operate helps in the selection of appropriate conditions for action.

The definition of play which focuses upon the process is very broad. It might be most useful for drawing together much of the literature in physical education. For example, physical movement and play may be related through such a dynamic conception of play. The broad definition also allows a large number of alternatives to be considered within the context of play. Such considerations as the dynamic balance between two teams in a sport contest, for example, are interesting. These considerations have been largely ignored because the scope of many treatments of physical education has been too narrow, because the psychological component has been ignored, or because the routine aspects of the behaviors have been studied rather than the playful aspects.

More limited versions of the definition may be useful in cases where a limited scope permits in depth treatment. Experimental work generally requires such conditions. The description of play as a behavior resulting from psychological dissonance is an example. In this case, emphasis was placed on the causal aspects of the description in chapter three of play behavior. The conception of play remained the same while the emphasis and scope of the definition were changed. Such changes permit one to deal with aspects of the behavior without the confusion which arises from considering too many factors. At the same time, it is important to preserve the other alternative of a broad definition in order to consider alternatives when necessary.

A great deal of further study into the conception and definition of play is warranted. Play behavior probably forms the psychological basis of most of the behaviors which are of concern to physical educators. If it is an exploratory behavior which involves adaptation to previously unfamiliar situations, then the mechanisms by which this adaptation takes place need to be studied. The important discoveries in other disciplines will be of minor value when compared with the impact of the results of such investigations. Reinforcement theory, for example, shows how people behave in familiar circumstances. Where circumstances are predominantly unfamiliar the impact of such theory is of limited value.

In physical education, therefore, the study of exploratory behavior is of great importance. Systematic investigation of simple forms of exploration are well underway in physical education and in psychology. The investigation of such factors in sports and games, or more complex forms of play behavior, is largely untouched.

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